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Efficient Definition and Communication of Patent Rights: The Importance of Ex Post Delineation

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EFFICIENT DEFINITION AND COMMUNICATION OF PATENT RIGHTS: THE IMPORTANCE OF EX POST DELINEATION

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Abstract

As with any area of law, rights and duties relating to patents should be clearly communicated in an efficient manner. Unfortunately, uncertainty concerning the scope of the rights granted by patents frequently results in expensive litigation. Most proposals for reducing this uncertainty do not examine its root causes and focus only on measures to provide additional clarification in patent applications. Such ex ante proposals are often inefficient because considerable uncertainty is inherent, given the limits of language and of our ability to foresee future developments. In addition, ex ante clarification often would be wasteful because so few patents are valuable enough to be contested. Therefore, ex post clarification of patent scope after potentially infringing activities have occurred would be more efficient than efforts to clarify exclusively through ex ante measures. More specifically, two ex post techniques should be adopted. First, courts should recognize that patents often cannot communicate ex ante the scope of patent rights and should adjust certain patent law doctrines accordingly. Second, an administrative procedure should be established to cheaply clarify patent scope after a patent has issued.

I. INTRODUCTION: THE PROBLEM OF DEFINING THE SCOPE OF PATENTS

In many respects, patents comport with traditional notions of property.[1] Patents can be owned, bought, sold, and licensed. Patents can also be incredibly valuable assets, as shown by high-profile patent

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1. Patlex Corp. v. Mossinghoff, 758 F.2d 594, 599 (Fed. Cir. 1985) ("It is beyond reasonable debate that patents are property.").

litigation like the dispute between NTP and Research In Motion (RIM) regarding RIM's Blackberry email service, which resulted in a 612.5 million dollar settlement following a finding of patent infringement.[2] Such settlements (and similar judgments) occur because patents confer rights to exclude people from undertaking commercial activities that may be lucrative.[3] This feature of patents further justifies an understanding of patents as a form of "property," as the right to exclude has been termed "the very definition of 'property.'"[4] Unfortunately, this similarity has important limits. With physical property, it is relatively straightforward to determine the "thing" that is possessed and owned,[5] and this ease of determination facilitates the identification of the factual scenarios in which the right of exclusive possession applies.[6] For example, to determine whether someone has trespassed on a parcel of land, an owner need only discover whether that person crossed a boundary of the property, which typically is a simple process.[7] With patents, however, it is often hard to determine the thing" that is owned and thus hard to identify the "boundaries" delimiting the contexts in which the right to exclude applies. As a result, determining the scope of a patent is a critical step in any negotiation for the license or sale of patent rights or in any patent lawsuit.[8] Indeed, many patent infringement cases settle after

2. Ian Austen, *BlackBerry Service to Continue*, N.Y. TIMES, Mar. 4, 2006, at C1.

3. 35 U.S.C. § 271 (2000) ("[W]hoever ... makes, uses, offers to sell, or sells any patented invention ... infringes the patent."). Injunctive relief, however, is not automatically awarded for patent infringement. eBay Inc. v. MercExchange, Inc., 547 U.S. 388, 394 (2006).

4. Carl Schenck, A.G. v. Nortron Corp., 713 F.2d 782, 786 n.3 (Fed. Cir. 1983); *e.g.*, Loretto v. Teleprompter Manhattan CATV Corp., 458 U.S. 419, 435 (1982) ("The power to exclude has traditionally been considered one of the treasured strands in an owner's bundle of property rights.")

5. *See, e.g.*, Carol M. Rose, *Possession as the Origin of Property*, 52 U. CHI. L. REV. 73, 83 (1985) (discussing the difficulty of "possessing" patentable ideas).

6. *See* Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J. L. & Econ. 265, 276 (1977) ("Unlike fisheries, public roads, and other types of goods usually considered, technological information can be used without signaling that fact to another.").

7. *See* Robert C. Ellickson, *Property in Land*, 102 YALE L.J. 1315, 1327-28 (1993) (describing the reduction in monitoring costs produced by clear boundaries); William R. Hubbard, Note, *Communicating Entitlements: Property and the Internet*, 22 YALE L. & POL'Y REV. 401, 404-05 (2004).

8. *See* JAMES BESSEN & MICHAEL J. MEURER, PATENT FAILURE: HOW JUDGES, BUREAUCRATS, AND LAWYERS PUT INNOVATORS AT RISK 46 (2008); Jeffrey A. Lefstin, *The Measure of the Doubt: Dissent, Indeterminacy, and Interpretation at the Federal Circuit*, 58 HASTINGS L.J. 1025, 1025 (2007); Kristen Osenga, *Linguistics and Patent Claim Construction*, 38 RUTGERS L.J. 61, 68 (2006) (describing claim construction as "the most important step in any patent litigation").

the court determines the scope of the patent, even if infringement itself has not yet been decided.[9]

Because determining the scope of a patent before resorting to litigation is not only important but also fraught with potential uncertainty, it is tempting to try to reduce uncertainty by using analogies to concepts applicable to traditional property. However, when determining boundaries, the analogies between patents and traditional notions of property rights become less useful and potentially misleading. Lacking the tangible corpus of traditional property, the scope of a patent is largely determined by reference to the written patent document, particularly the patent's "claims," which are numbered sentences at the end of the patent (and the patent application before the patent issues) that "particularly point[] out and distinctly claim[] the subject matter which the applicant regards as his invention."[10] While interpreting these claims to determine the scope of patent protection, courts often liken them to the "metes and bounds" of a parcel of land.[11] Construing the claims may be straightforward in instances where the patent claims, when understood through accepted rules of interpretation, clearly communicate that a set of facts is covered by the patent.[12] Often, however, patent claims are open to conflicting interpretations, each of which is reasonable.[13] In such cases, the "metes and bounds" analogy is a legal fiction that is, at best, unhelpful and, at worst, misleading.

Because of the importance of determining the scope of patents, courts and commentators consider scope uncertainty to be a serious

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9. *See* Kelly Casey Mullally, *Patent Hermeneutics: Form and Substance in Claim Construction*, 59 FLA. L. REV. 333, 337 & n.21 (2007); Osenga, *supra* note 8, at 69; Christopher A. Cotropia, *Patent Claim Interpretation Methodologies and Their Claim Scope Paradigms*, 47 WM. & MARY L. REV. 49, 70-71 & n.99 (2005).

10. 35 U.S.C. § 112 (2000); *see infra* notes 45-48 and accompanying text.

11. *See infra* note 149.

12. *See infra* notes 50-56 and accompanying text; *cf.* H.L.A. HART, THE CONCEPT OF LAW 130 (2d ed. 1994) ("Legal theory has in this matter a curious history; for it is apt either to ignore or to exaggerate the indeterminacies of legal rules.").

13. Osenga, *supra* note 8, at 64; *see also* Gretchen Ann Bender, *Uncertainty and Unpredictability in Patent Litigation: The Time is Ripe for a Consistent Claim Construction Methodology*, 8 J. INTELL. PROP. L. 175, 205-08 (2001) (discussing the unpredictability of claim construction). In fact, the extent to which the Patent Office requires adjustment to the text of patent claims during the application process heavily depends upon which patent examiner is working on the patent, indicating that different patent examiners interpret patent claims differently. *See* Douglas Lichtman, *Rethinking Prosecution History Estoppel*, 71 U. CHI. L. REV. 151, 155, 170 (2004).

problem that must be remedied through legal reform.[14] Many argue that patent applications should be required to contain additional information regarding the claimed inventions.[15] This article argues that these proposed enhancements before a patent issues are misguided. Certainly, some patents can be improved. Patentees may sometimes be strategically unclear or just sloppy. But a certain amount of uncertainty is often unavoidable, or even desirable, for at least three reasons.[16] First, uncertainty regarding patent scope often stems from the indeterminacy inherent in any effort to describe, with words, the full scope the patentee's inventive contribution. Even if the patentee were to include additional information regarding the invention, substantial uncertainty would persist. Second, for a variety of good reasons, patents must be broadened beyond the specific details of the discovery of the inventions covered by the patents. Implicit broadening is inherently unclear, and even explicit broadening engenders uncertainty because broad claim terms are likely to be indeterminate. Third, even if some uncertainty could be removed by requiring patent applicants to provide more robust information regarding patent scope, it is often inefficient to do so. As the Supreme Court stated long ago, "[t]he specification and claims of a patent, particularly if the invention be at all complicated, constitute one of the most difficult legal instruments to draw with accuracy . . . ."[17] Drafting patents is hard, and the benefits from many proposed additional requirements likely do not justify the costs involved.

Part II of this article describes, in general terms, the costs and benefits that arise in communicating the scope of property rights in general and of patent rights in particular. Part III discusses important sources of uncertainty in communications regarding patent scope and

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14. *See, e.g.*, BESSEN & MEURER, *supra* note 8, at 19; Jeffrey A. Lefstin, *Claim Construction, Appeal, and the Predictability of Interpretive Regimes*, 61 U. MIAMI L. REV. 1033, 1033-35 (2007); Lefstin, *supra* note 8, at 1026; Mullally, *supra* note 9, at 350; F. Scott Kieff, *The Case for Registering Patents and the Law and Economics of Present Patent-Obtaining Rules*, 45 B.C. L. REV. 55, 110 (2003) (contending that patentees should "simply draft[] a better patent disclosure at the outset"); *see also* Markman v. Westview Instruments, Inc., 52 F.3d 967, 978-79 (Fed. Cir. 1995) (en banc) (contending that judges should determine the "true and consistent scope of the patent owner's rights"), *aff'd*, 517 U.S. 370 (1996).

15. *See infra* notes 198-199 and accompanying text.

16. Bender, *supra* note 13, at 209 ("Before proposing a solution to the *Markman* problem, we need to understand why uncertainty and unpredictability exist in claim construction."); *see also* BESSEN & MEURER, *supra* note 8, at 53 (lamenting the use of "vague" words in patents); *cf.* Hubbard, *supra* note 7, at 406 n.28 (noting that "intellectual property sometimes lacks clear boundaries").

17. Topliff v. Topliff, 145 U.S. 156, 171 (1892).

the ways these sources of uncertainty limit the utility of analogizing the clarification of a patent's scope to the clarification of real property boundaries, contract terms, or statutory language. Part III also argues that it is inefficient to improve communications regarding the scope of all patents through lengthier, more detailed patent applications because the vast majority of patents have no value. Relying on the earlier discussions of the reasons for uncertainty in patent scope, Part IV argues that clarifying the scope of patents after they have issued is more efficient than attempting to fully define scope ex ante. This Part recommends that certain patent law doctrines be adjusted to reflect the need for some ex post clarification. Moreover, because ex post clarification cannot be eliminated, efficiency is promoted by making such ex post delineation cheaper. This Part therefore recommends expanding current administrative procedures before the United States Patent and Trademark Office (USPTO) to provide for cheap clarification of patent scope. Part V concludes by summarizing this article's analysis and proposals.

II. COMMUNICATING RIGHTS

A. General Considerations

Property law controls the legal relations between various actors by granting owners rights and imposing correlative duties on others.[18] For example, the owner of a parcel of land has the right to limit, to a considerable degree, who may enter the parcel, when they may enter it, and what they may do while on the property. For property rights to have any effective meaning, their parameters must be communicated to owners, to duty holders, and to authorities.[19] Indeed, because the essence of property rights is their capacity to impact the behavior of the holders of rights and duties, these rights are substantially *defined*

18. Clarisa Long, *Information Costs in Patent and Copyright*, 90 VA. L. REV. 465, 468 (2004); *see* Henry E. Smith, *The Language of Property: Form, Context, and Audience*, 55 STAN. L. REV. 1105, 1117 (2003); *see, e.g.*, WESLEY NEWCOMB HOHFELD, FUNDAMENTAL LEGAL CONCEPTIONS AS APPLIED IN JUDICIAL REASONING 36-38 (Walter W. Cook ed., 1964) (discussing rights and duties in terms of fundamental correlative relationships). In contrast, tort law imposes duties on property owners–for example, the duty of care owed to entrants on an owner's or tenant's land. *See, e.g.*, DAN B. DOBBS, THE LAW OF TORTS §§ 232-38 (2000).

19. This article addresses property rights and not general human rights. Though some rights may be considered "self evident," the identification and communication of such rights is beyond the scope of this article.

by their communication.[20] In other words, a "right" that cannot be communicated is hardly a right at all.[21]

All communication, including communication regarding property rights, entails costs, including both the costs required to communicate successfully and the losses resulting from failed communication. Efforts to communicate successfully should therefore be limited so that the marginal costs of increased success do not exceed the marginal benefits.[22] Because of this efficiency concern, some communications costs need not be incurred despite their capacity to promote successful communication. For example, owners of real property typically are not required to build fences that communicate the location of boundaries, even though such fences would likely improve communication.[23]

Communication requires the drafting and sending of a message and interpretation of the message by the recipient.[24] Thus, the informational content of a communication can be affected by both the message and the rules of interpretation, which are often communicated independently from the message. In some instances, the message contains much information, while rules of interpretation inject relatively little additional information. For example, in the spoken phrase, "The British soldiers are coming by sea," interpretation requires only an understanding of verbal English,

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20. *See* STEPHEN R. MUNZER, A THEORY OF PROPERTY 69-74 (1990) (arguing that property requires communication via "physical manifestations"); Long, *supra* note 18, at 495 (noting that "[i]information costs loom large in property law generally, and even more so in intellectual property"); *see also* Smith, *supra* note 18, at 1126 (noting that "[l]aw involves communication of information").

21. *See, e.g.*, LON L. FULLER, THE MORALITY OF LAW 38-39 (rev. ed. 1969) ("[T]he attempt to create and maintain a system of legal rules may miscarry in at least eight ways[, including] . . . a failure to publicize, or at least make available to the affected party, the rules he is expected to observe . . . .").

22. *See* Smith, *supra* note 18, at 1108; Hubbard, *supra* note 7, at 412-13; *see also* Long, *supra* note 18, at 477-78, 547-48 (discussing communication costs for patents and copyrights).

23. Long, *supra* note 18, at 482 (noting that "fences or other such markers indicate boundaries in a way that [are] usually easy to interpret"); Hubbard, *supra* note 7, at 405; *see also infra* note 211 and accompanying text (discussing the use of fencing to improve communication). Sometimes, the marginal benefit of requiring fences does exceed the costs, and land owners may be required to build fences, such as when their property includes an attractive nuisance. *See, e.g.*, Henson *ex rel.* Hunt v. Int'l Paper Co., 650 S.E.2d 74, 81 n.7 (S.C. 2007) ("[W]here a landowner defines the borders of his property . . . by fence or other barrier, and such fence or barrier is of a type that should reasonably be expected to exclude children or to place children on notice that their presence is not welcome, recovery for injuries to child trespassers should generally be precluded.").

24. Mullally, *supra* note 9, at 336 ("[A]ll written documents . . . require interpretation to give them effect.").

something fairly common in the North American colonies. On the other hand, interpretation may add substantial information.[25] Lanterns raised in the Old North Church in Boston convey, by themselves, no information regarding British troop movements. American revolutionaries needed to understand the detailed and specific rule of interpretation of "one if by land, two if by sea" for two lanterns to communicate that the British soldiers were coming by sea. Because communication involves both messages and rules of interpretation, the degree of reliance on one aspect or the other can impact the success of communication.[26] Therefore, evaluating the efficiency of different communication techniques requires consideration of both aspects to determine the best coordinated balance between messages and rules of interpretation.[27]

Communicating property rights through messages and rules of interpretation is particularly difficult for many reasons. For example, property rights frequently are complex, and may vary in their effects on different classes of people. Complex rules authorize police to enter a private owner's real property in circumstances where the general population may not. Similarly, different classes of audiences may also require different types of messages. A potential buyer may research public deeds to learn who owns a lot in order to negotiate for its purchase. In contrast, a passing hiker need only know the boundary of the parcel; the identity of the owner is not important. Thus, a sign or fence is generally sufficient to communicate to hikers. Property rights may also apply only in certain places, as with a license to use a trademark in one franchise location. Property rights may be limited to certain objects, like personal food kept in a communal refrigerator.

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25. FRED I. DRETSKE, KNOWLEDGE AND THE FLOW OF INFORMATION 42-43 (1999).

26. The author previously described techniques for communicating efficiently by focusing on "messages" and "methods." Hubbard, *supra* note 7, at 402-03. Methods are similar to rules of interpretation but broader in that methods also involve the mechanism for *transmitting* a message. For example, colonial Bostonians used a message ("one" or "two") and rules of interpretation ("one if by land, two if by sea") as well as an effective method (the use of lanterns to communicate quickly over a long distance). Efficient communication requires consideration of all aspects of the exchange of information.

27. Perhaps the simplest combination of messages and rules of interpretation arises with usufructuary rights to public resources, like space on a beach or seats in a movie theater. The use of a resource is itself the message. The rule of interpretation is very straightforward: "current use allows continued use." Saving seats for a person who is absent is more complicated. One seat can clearly be saved, while saving a whole row in a crowded theater would not be permitted. Where is the line? Given their simplicity, usufructs arise almost spontaneously in novel contexts, such as on-line computer games. *See* WoW Wiki, http://www.wowwiki.com/Mining (last visited Nov. 11, 2008) (discussing the proper etiquette regarding the use of resources for "mining" in a popular on-line game).

Property rights may also impact only certain uses or activities. Zoning restrictions, for instance, may prohibit commercial development in a residential neighborhood. Despite this complexity, the communication of property rights is expected to be constant and consistent over their duration, which can last for many years.[28] Where the class of duty holders for a property right is large and undefined, the entitlement must also be communicated to a broad audience.[29] Even if the right will affect only a small part of that audience, widespread communication may be necessary because it is frequently unclear ex ante which potential duty holders will be directly affected. For example, real property boundaries are potentially communicated to the entire world via publicly recorded deeds, even though only a much smaller set of persons *actually* will interact with a particular parcel of land.

As with any communication, efficiently defining and conveying complex entitlements like property rights to recipients requires coordination between messages and rules of interpretation. Sometimes, the messages provide the bulk of the information regarding some aspect of a property right and employ only simple translation rules. For example, the physical contours of the space from which the owner of a parcel of land can exclude a third party are communicated with highly detailed messages–the two-dimensional boundaries of the plot of land. Once those boundaries are determined, the "*ad ceolum*" principle defines the three-dimensional limits of the owners' property rights.[30]

On the other hand, communication may rely less on detailed messages and more on rich translation rules. For example, the temporal scope of interests in real property has historically been limited to five different categories: "the fee simple absolute, the defeasible fee simple, the fee tail, the life estate, and the lease."[31] These category designations by themselves do not convey much information about the legal interests to which they relate. Instead,

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28. MUNZER, *supra* note 20, at 29, 79 (discussing the importance of expectations and property).

29. Thomas W. Merrill & Henry E. Smith, *Optimal Standardization in the Law of Property: The* Numerus Clausus *Principle*, 110 YALE L.J. 1, 26-27 (2000); Hubbard, *supra* note 7, at 418.

30. RESTATEMENT (SECOND) OF TORTS § 159 cmt. g (1965) ("Sir Edward Coke once gave the utterance to the statement that '*cujus est solum, ejus est usgue ad ceolum*,' which, taken literally, means that he who owns the soil owns upward unto heaven. This has been repeated in many cases . . . ."); JESSE DUKEMINIER & JAMES E. KRIER, PROPERTY 133 (4th ed. 1998); Smith, *supra* note 18, at 1116.

31. Merrill & Smith, *supra* note 29, at 13; *see also* Hubbard, *supra* note 7, at 407-08.

each of these categories corresponds to a detailed set of legal principles and complicated rules for interpreting these messages (as many law students can attest). For example, merely indicating that a person owns a "fee simple" does not communicate the temporal scope of the property right unless the term "fee simple" is understood.[32] Perhaps for this reason, land owners are largely prevented by "*numerus clausus*" from creating new interests in land.[33] Such a new interest would require that other owners and third parties learn a new rule of interpretation in order to understand the meaning of the new legal interest.[34]

Whether detailed messages or robust interpretation rules better promote efficient communication may depend upon whether senders or receivers are better suited to bear particular communication costs.[35] Requiring more detailed messages raises costs for those who create and send them.[36] For example, if the law required the boundaries of all parcels of land to be identified with fences, owners would incur additional costs.[37] On the other hand, learning and applying interpretation rules requires investment by the recipients of the messages.[38] This article focuses on efficiency and, thus, on the desire to impose communication costs on the parties that can most cheaply bear or reduce them.[39] Where persons with knowledge can convey that information more cheaply than third parties can independently discover it,[40] *ceteris paribus*, those with knowledge should be required to incur costs to communicate it.[41] Similarly, requiring

32. Moreover, the temporal scopes of some of these categories require further explanation, such as the term of the lease.

33. Merrill & Smith, *supra* note 29, at 13; Hubbard, *supra* note 7, at 407.

34. Henry Hansmann & Reinier Kraakman, *Property, Contract, and Verification: The* Numerus Clausus *Problem and the Divisibility of Rights*, 31 J. LEGAL STUD. 373, 397 (2002); Hubbard, *supra* note 7, at 410; *see also* Long, *supra* note 18, at 468, 546 (noting that "[*s*]*ui generis* forms of protection raise information costs along one margin–that of comprehending legal rules").

35. Hubbard, *supra* note 7, at 423.

36. Smith, *supra* note 18, at 1132 (noting that a "shorter message is cheaper to produce"); Louis Kaplow, *Rules Versus Standards: An Economic Analysis*, 42 DUKE L.J. 557, 562-63 (1992).

37. Hubbard, *supra* note 7, at 412.

38. Smith, *supra* note 18, at 1108, 1132, 1139; Hansmann & Kraakman, *supra* note 34, at 397; Merrill & Smith, *supra* note 29, at 8; Hubbard, *supra* note 7, at 410; *see also* Long, *supra* note 18, at 468, 546 (noting that "[s]ui generis forms of protection raise information costs along one margin–that of comprehending legal rules").

39. Hubbard, *supra* note 7, at 423; *see also* Mullally, *supra* note 9, at 381 (discussing the importance of "properly allocat[ing] burdens" in communicating patent scope).

40. Hubbard, *supra* note 7, at 423-27.

41. *Id.* at 423.

recipients of messages to learn complicated interpretation rules, like the meanings of the different legal interests in real property, promotes efficient communication where those rules allow for successful communication using cheap, easy-to-produce messages.[42] Efficiency may also be promoted when communication costs are borne by a party that can use messages or rules of interpretation in multiple communications and thereby amortize costs.[43] For example, although a complicated rule of interpretation may be initially expensive to create and learn, it may nevertheless promote efficiency if it can be applied in a great many communications. Finally, it may be more efficient for communications to fail if successful communication is not cost effective.

B. Patent Rights and the Role of Claim Construction

Like other types of property rights, the details of a patent's scope are communicated using messages and rules for interpreting those messages. The primary sources of messages regarding patent rights are patent applications and the patents themselves.[44] An application (and subsequently a patent) is comprised of a "specification" that "conclude[s] with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention."[45] The specification contains a detailed description of the invention, but the "claims . . . pointing out . . . the subject matter"[46] are the most important messages regarding patent scope. Indeed, these claims are often viewed as defining the "metes and bounds" of the patent.[47] However, each patent claim typically consists of only a single, densely-written sentence.[48] Given this relative brevity, understanding the meaning of patent claims requires substantial interpretation.[49] In other words, the communication of a patent's scope heavily relies on a system of robust interpretation rules.

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42. *See* Merrill & Smith, *supra* note 29, at 13.

43. *See* Kaplow, *supra* note 36, at 563; Hubbard, *supra* note 7, at 427-28.

44. BESSEN & MEURER, *supra* note 8, at 238.

45. 35 U.S.C. § 112 (2000); *see also* MUNZER, *supra* note 20, at 73 (discussing the use of the patent specification to communicate the scope of patent rights).

46. 35 U.S.C. § 112 (2000).

47. Cotropia, *supra* note 9, at 70 (claiming that "[o]nce a claim's meaning is determined, the exact location of the patent's metes and bounds are known"); Bender, *supra* note 13, at 214-15; Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839, 845 (1990).

48. Mullally, *supra* note 9, at 349.

49. *See id.* at 336.

This system is based on several well-accepted rules of interpretation.[50] First, each claim is interpreted in the context of the entire patent document, including other claims[51] and the other parts of the specification. For example, the textual context in which a word is used may be considered.[52] Indeed, a patentee is allowed to act as his or her own "lexicographer," and thus to imbue a term with an idiosyncratic meaning that predominates over the term's ordinary meaning.[53] Second, claim interpretation may also take into account the record of all of the proceedings before the USPTO leading up to the patent's issuance.[54] Third, in addition to these intrinsic evidentiary sources, the meaning of a word in a claim is based on the "ordinary and customary" meaning of the term to a person having ordinary skill in the art (often abbreviated "PHOSITA") relevant to the invention at the time of the invention.[55] A PHOSITA, however, is defined by "the art" and not the words of the patent. Understanding the perspective of this idealized audience may require reliance on information separate and apart from the history of the patent, such as dictionaries, treatises, expert testimony, or other extrinsic sources regarding relevant scientific principles and the state of the art.[56]

To some extent, patent law requires the use of claims in order to foster greater certainty about the scope of patent rights. For example, claims are easy to locate, as they always appear at the end of the patent.[57] In light of these features, claims are often described as providing sufficient "notice" of the scope of patent rights.[58] However, this notice is somewhat fictional because claim construction is far from being an exact science, and reasonable people often disagree regarding the construction of crucial terms. Even though the

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50. *See infra* notes 102-110 and accompanying text (discussing canons of interpretation for patents).

51. For example, claims can be drafted as either "independent" or "dependent," with dependent claims "contain[ing] a reference to a claim previously set forth and then specify[ing] a further limitation of the subject matter claimed." 35 U.S.C. § 112 (2000). Dependant claims thus provide additional clarification to independent claims.

52. Phillips v. AWH Corp., 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc).

53. *Id.* at 1313; *see* Joseph Scott Miller, *Enhancing Patent Disclosure for Faithful Claim Construction*, 9 LEWIS & CLARK L. Rev. 177, 204 (2005).

54. Phillips, 415 F.3d at 1317.

55. *Id.* at 1313.

56. *Id.* at 1314.

57. *Id.* at 1311-12; 35 U.S.C. § 112 (2000).

58. Mullally, *supra* note 9, at 334. *But see* John R. Thomas, *Claim Re-Construction: The Doctrine of Equivalents in the Post*-Markman *Era*, 9 LEWIS & CLARK L. REV. 153, 160 (2005) (noting that, because of the Doctrine of Equivalents, "it has never been the law that the claims provide the entirety of the metes and bounds of the patent rights").

construction of a patent claim often controls the outcome of an infringement dispute,[59] claim construction is frequently unpredictable. The Federal Circuit, which has exclusive jurisdiction to review claim constructions in cases arising under the patent laws,[60] changes district court claim constructions in nearly one third of patent cases.[61] Moreover, a substantial number of claim constructions by the Federal Circuit issue with dissents.[62]

Unfortunately, uncertainty regarding claim scope in issued patents can engender substantial costs and undermine efficient innovation.[63] An audience reviewing the patent may incorrectly construe the patent too narrowly, prompting unintentional infringement that otherwise could have been cheaply avoided had the infringer correctly understood the patent claims.[64] Incorrectly interpreting a patent too broadly may also result in inefficiency. Fearing infringement, a person may avoid productive activities that are not protected by the patent or pay unnecessary royalties to the patent owner. Because such royalties foster deadweight loss, they do not effectively promote innovation.[65] Finally, inefficiency results because of the high administrative costs of determining the scope of a patent.[66] Where it is unclear whether a patentee has construed a patent too broadly or whether an alleged infringer has construed it too narrowly, this uncertainty often leads to expensive litigation.[67]

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59. Mullally, *supra* note 9, at 337.

60. 28 U.S.C. § 1295 (2000).

61. Osenga, *supra* note 8, at 65.

62. Lefstin, *supra* note 14, at 1037; Thomas, *supra* note 58, at 163; *see, e.g.*, Acumed LLC v. Stryker Corp., 483 F.3d 800, 814 (Fed. Cir. 2007); Agfa Corp. v. Creo Prods. Inc., 451 F.3d 1366, 1384 (Fed. Cir. 2006); nCube Corp. v. SeaChange Int'l, Inc., 436 F.3d 1317, 1327 (Fed. Cir. 2006); Phillips v. AWH Corp., 415 F.3d at 1303, 1328 (Fed. Cir. 2005) (en banc).

63. Mullally, *supra* note 9, at 335 (noting that "claims play the dispositive role in balancing competing interests in the law of invention"); Miller, *supra* note 53, at 196; *see also* BESSEN & MEURER, *supra* note 8, at 46 (extolling the benefits of clear notice of property boundaries); Long, *supra* note 18, at 502.

64. *See* Mullally, *supra* note 9, at 366; Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991, 2008-10 (2007). A patent examiner could also misconstrue the scope of the claims in a patent application and allow an invalid patent to issue that may be used to restrict commercially beneficial activities without any concomitant boon to innovation.

65. *See, e.g.*, Miller, *supra* note 53, at 199; Bender, *supra* note 13.

66. *Cf.* GUIDO CALABRESI, THE COSTS OF ACCIDENTS 225-26 (1970) (discussing administrative costs).

67. BESSEN & MEURER, *supra* note 8, at 120-38 (discussing the costs of patent litigation).

III. PROBLEMS WITH CURRENT PROPOSALS TO ADDRESS UNCERTAINTY IN COMMUNICATING PATENT SCOPE

Many scholars have criticized patent law for the uncertainty, and associated costs, involved with claim construction.[68] Despite this widespread criticism, scholars have not adequately addressed the sources of this uncertainty or the relative costs of alternatives that might reduce it.[69] The first omission is important because it is not possible to develop workable remedies to reduce uncertainty without a proper understanding of its causes.[70] For example, comparisons between patents and other legal concepts like real property, contracts, or statutes may not help to improve communications regarding patent scope because patents and other legal instruments involve different obstacles to clear communication. The failure to address the relative costs and benefits of methods to improve communications regarding patent scope results in proposals that fail to appreciate that uncertainty is often difficult, if not impossible, to eliminate and that some methods to reduce it are better than others.

A. Textual Sources of Uncertainty

1. The use of Words in a World of Factual Uncertainty

A major source of uncertainty regarding the scope of patents is that patents are based largely on written words,[71] which are inherently imprecise to a considerable extent.[72] The words of a patent claim are

68. Mullally, *supra* note 9, at 343 ("A perceived lack of certainty, in the sense of predictability of results (e.g., claim, scope, or meaning), has been the basis for much criticism of patent law in general, and claim construction specifically . . . ." (footnotes omitted)); *see, e.g.*, BESSEN & MEURER, *supra* note 8, at 46-72; Thomas, *supra* note 58, at 165; Cotropia, *supra* note 9, at 98-99. Some of the criticism regarding the clarity of claim scope stems from the Federal Circuit's inconsistent jurisprudence regarding the proper methodology for construing patent claims. In 2005, the Federal Circuit attempted to harmonize its jurisprudence through the en banc decision Phillips v. AWH Corp., 415 F.3d 1303 (Fed. Cir. 2005) (en banc). The uncertainty stemming from inconsistent case law has therefore been largely addressed and is accordingly not the subject of this article.

69. *Cf.* Thomas, *supra* note 58, at 165 (noting the "industrial uncertainty" in patent scope stemming from sources other than indeterminate patent claims).

70. *See also* Cotropia, *supra* note 9, at 100 (noting that some commentary "begs the question of whether any [claim construction] methodology can produce absolute certainty in claim meaning").

71. Patents may also be communicated using drawings and samples.

72. Bender, *supra* note 13, at 209 ("To some extent, the nature of language and the purpose of patent claims make absolute clarity impossible."); *see* Lawrence M. Solan, *Why Laws Work Pretty Well, but Not Great: Words and Rules in Legal Interpretation*, 26 LAW & SOC. INQUIRY 243, 244 (2001); *see also* Autogiro Co. of Am. v. United States, 384 F.2d 391,

the primary messages by which patent scope is determined and communicated, though additional messages about patent scope also appear in the specification.[73] These messages, along with the accepted rules for their interpretation, provide relatively clear core concepts, but uncertainty inevitably intrudes at the margins. However, despite a wealth of legal scholarship addressing the imprecision of language in non-patent contexts, patent-law scholars often fail to recognize this inherent obstacle to patent-scope certainty.

Words are imprecise because, for example, they have multiple meanings, and it may not be clear which meaning is intended.[74] For example, rock may refer to a stone, a type of music, a rocking movement, etc. Even when it is clear which meaning of a word a speaker intended to use, whether that meaning includes a particular concept may be unclear.[75] The possible scope of a specific meaning of an individual word itself does not have clear linguistic boundaries.[76] Words are often understood as focusing on certain "prototypes" or "plain cases."[77] For instance, "rock", when used to reference stone, clearly includes materials like granite, slate, and marble. The further that a concept strays from prototypical examples, the more difficult the classification becomes.[78] As H.L.A. Hart observed, "uncertainty at the borderline is the price to be paid for the use of general classifying terms in any form of communication concerning matters of fact."[79]

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396 (Ct. Cl. 1967) ("The very nature of words would make a clear and unambiguous claim a rare occurrence.").

73. A full discussion of the imprecision of language is beyond the scope of this article.

74. Dan L. Burk & Mark A. Lemley, *Quantum Patent Mechanics*, 9 LEWIS & CLARK L. REV. 29, 40 (2005).

75. Long, *supra* note 18, at 506 ("Some degree of ambiguity will be irreducible.").

76. Solan, *supra* note 72, at 257 (noting that "concepts have fuzzy boundaries . . . [and] some examples of words are better than others").

77. HART, *supra* note 12, 126 (noting that there will be "plain case[s for which] the general terms seem to need no interpretation and where the recognition of instances seems unproblematic or 'automatic' . . . ."); *see also* Burk & Lemley, *supra* note 74, at 32 ("The text of patent claims may . . . lack[] a sharp outer perimeter, but usually situated [sic] within a particular core range of meaning."); Andrew Auchincloss Lundgren, *Perspectives on Patent Claim Construction: Re-Examining* Markman v. Westview Instruments *Through Linguistic and Cognitive Theories of Decisionmaking*, 12 U. BALT. INTELL. PROP. L.J. 173 (2004) (discussing prototypical meanings of words); Solan, *supra* note 72, at 257.

78. *See* HART, *supra* note 12, at 127 (noting that whether a concept satisfies a legal rule depends upon "the criteria of relevance and closeness of resemblance"); *see also* Osenga, *supra* note 8, at 107 (noting that narrow claim constructions based on generally accepted meanings provide better notice than meanings that incorporate less widely accepted meanings); *see also* Solan, *supra* note 72, at 257.

79. HART, *supra* note12, at 128; *see also* Long, *supra* note 18, at 471 ("Despite the best efforts of individuals and the presence of formal and informal rules, property rights remain ambiguous around the edges.").

For example, in a communication regarding "rocks," it may not be clear whether "rock" includes gravel (small rock?), sand (very small rock?), chalk dust (very, very small rock?), salt (rock salt?), or cement (if shaped, textured, and colored to resemble rock). Moreover, people may disagree whether a factual scenario is sufficiently similar to a prototype or plain case to fall within the definition of a word. Some people, for example, may consider rock salt to be a rock, while others do not. Determining whether a word includes a particular factual scenario may therefore involve subjective considerations based on past experiences.[80]

Another reason that patent claims are necessarily unclear stems from the difficulty of using words to create laws in a world of factual uncertainty.[81] By describing certain activities that can only be undertaken with permission from the patentee, patent claims establish laws, albeit of limited application. Uncertainty in law stems, in part, from what Hart calls the indeterminacy of fact, which reflects our ignorance of "all the possible combinations of circumstances which the future may bring."[82] When words are assembled to create laws (including patent claims), the indeterminacy of fact gives rise to another form of uncertainty: "indeterminacy of aim."[83] Because we cannot foresee all relevant factual scenarios when we are formulating rules, we cannot consider how to treat those unforeseen circumstances.[84] Although careful word selection and forethought may limit indeterminacies to a certain extent, it is unlikely that thought and drafting can entirely eliminate them because, as Hart

80. *See* Burk & Lemley, *supra* note 74, at 51; *see also* Solan, *supra* note 72, at 263. Dan Burk and Mark Lemley have argued that uncertainty in the meaning of patent claims also stems from the different ways that words in a claim can be grouped into elements:

> Define an element narrowly–limit it to a single word, say–and you will tend to narrow the resulting patent, because to prove infringement the patentee must show that each word has a corresponding structure in the accused device. By contrast, defining an element broadly tends to broaden the patent, because it permits the text to be read on a greater range of accused devices.

Burk & Lemley, *supra* note 74, at 30, 44-45.

81. *See* Burk & Lemley, *supra* note 74, at 36 ("Thus, even so-called literal claim interpretation occurs at a relatively high level of abstraction, as no text is 'literally' found in the claimed invention–only a correspondingly described physical structure.").

82. HART, *supra* note 12, at 128; *see also* Mullally, *supra* note 9, at 376 ("The transaction costs of specifying every possible form of each aspect of the invention, even assuming that they can be foreseen, may exceed the gains."); *see also* Kaplow, *supra* note 36, at 600 (noting that "another limitation on the ability to formulate laws as rules involves limitations of language").

83. HART, *supra* note 12, at 128.

84. *See id.* at 129; *see also* Long, *supra* note 18, at 512.

cautioned, "we are men, not gods."[85] Rather, uncertainty is typically revealed when a new factual scenario arises, and "something in the nature of a choice between open alternatives must be made by whoever is to resolve them."[86]

With patents, the uncertainty created by open-textured meanings is particularly troubling. Under the Constitution, patents must protect the discoveries of inventors.[87] By definition, discoveries and inventions often involve changing, cutting-edge technology. However, both the future state of that technology and its terminology may be unsettled,[88] and infringement claims may not be brought until years after the patent was issued.[89] In addition, the lack of widely accepted terminology may prompt a patent applicant to use a word unconventionally,[90] thereby placing the use of the word well outside of familiar prototypes.[91] The meanings of words may also fluctuate over time as new terminology becomes standardized.[92] Indeed, the Federal Circuit has warned that "[a] particular term used in one patent need not have the same meaning when used in an entirely separate patent, particularly one involving different technology."[93] Moreover, infringing devices or processes may not resemble the specific invention that gave rise to the patent in the first place.[94] Consequently, at the time a patent is drafted, it may be particularly difficult to

85. HART, *supra* note 12, at 128. Some factual scenarios that appear obvious in retrospect may stem more from hindsight bias than foreseeability. *Cf.* KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727, 1742 (2007) (discussing the dangers of hindsight bias when reviewing the obviousness of an invention).

86. HART, *supra* note 12, at 127.

87. U.S. CONST. art. I, § 8, cl. 8.

88. *See* Osenga, *supra* note 8, at 66; *see also* Pharmastem Therapeutics, Inc. v. Viacell, Inc., 491 F.3d 1342, 1373 (Fed. Cir. 2007) ("The courts have recognized, particularly in fields of new and evolving knowledge, that the claims can be no more precise than the knowledge in the field permits.").

89. Indeed, through continuation applications, patents may issue years after an application was filed.

90. *See* Osenga, *supra* note 8, at 97.

91. Certain concepts, including the meanings of words, may be more psychologically prominent than others–a concept sometimes described as "salience." Smith, *supra* note 18, at 1129. Two persons are more likely to consider a meaning salient when they share substantial background information. Smith, *supra* note 18, at 1129. With technologies and terminology in flux, such background commonality may be less common, and notions of salience accordingly may not encourage different people to interpret patent terms similarly.

92. *See* Thomas, *supra* note 58, at 162-63; *see also* Smith, *supra* note 18, at 1181 (noting that words do not have constant meanings).

93. Medrad, Inc. v. MRI Devices Corp., 401 F.3d 1313, 1318 (Fed. Cir. 2005).

94. *See* Henry E. Smith, *Intellectual Property as Property: Delineating Entitlements in Information*, 116 YALE L.J. 1742, 1802 (2007).

envision all of the factual scenarios related to infringement in the future and thus difficult to decide which of those future scenarios should be declared to fall within the scope of the patent.[95] In short, the indeterminacies of fact and aim are particularly magnified with patents.[96]

The difficulties with ex ante communication of patent scope are increased because of problems with ex ante identification of the proper scope of patents. Efficient achievement of the constitutional goal of patents–"promot[ing] the Progress of Science and useful Arts"[97]–requires that patent scope correlate with the breadth of an inventor's discovery.[98] Because of the indeterminacies noted above, however, the relationship between an invention and later technology may not be foreseeable.[99] As a result of the inability to identify patent scope ex ante in terms of future technology, scope cannot be accurately conceived, much less precisely communicated. No matter how detailed or precise an ex ante delineation of patent scope is, that scope likely correlates inaccurately with the proper innovation-promoting scope of the invention.

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95. *Cf.* McCullogh v. Maryland, 17 U.S. 316, 385 (1819) ("How unwise would it have been, to legislate immutably for exigencies which had not then occurred, and which must have been seen but dimly and imperfectly!"). Indeed, some scholars have suggested that patent law needs revision because it allows for the patenting of items and technology that materially differ from the "paradigmatic assets" for which patent law was originally designed. Long, *supra* note 18, at 470, 542.

96. HART, *supra* note 12, at 126 (noting that "plain cases" include those that are "familiar ones, constantly recurring in similar contexts"). Jeffrey Lefstin has argued that claim construction is not particularly indeterminate when compared to other legal issues because the incidence of dissent in Federal Circuit opinions addressing claim construction is not significantly greater than the rate of dissent in other types of patent-law decisions. Lefstin, *supra* note 14, at 1044. Lefstin does not dispute, however, that claim construction may be somewhat indeterminate and instead contends that it is not especially indeterminate in comparison to other legal issues. Moreover, certain assumptions that Lefstin made in his study undermine its persuasiveness. For example, Lufkin assumes that the likelihood of dissent does not vary between issues except based on the indeterminateness of those issues. Judges may, however, be more likely to dissent on issues that have effect as precedent, and claim constructions are unlikely to be applied in multiple lawsuits. Indeed, Lefstin admits that some of his assumptions are "not precise." Lefstin, *supra* note 8, at 1083-84. A full examination of Lefstin's detailed study is beyond the scope of this article.

97. U.S. CONST. art. I, § 8, cl. 8; Transco Prods. Inc. v. Performance Contracting, Inc., 38 F.3d 551, 558 (Fed. Cir. 1994).

98. *See* Contropia, *supra* note 9, at 106-07; Long, *supra* note 18, at 480 (defining the novel aspect of an invention as the difference between the invention and the prior art).

99. Merges & Nelson, *supra* note 47, at 848 (noting that "no one knows what future developments will follow" a patent).

2. The Limits of Interpretive Rules

Like any communication, words in patents require interpretation, which may eliminate many potential meanings for many words and may help clarify the scope of individual meanings. Interpretation is particularly important with patent claims because they are such densely written statements.[100] Rules of interpretation, however, suffer from their own form of linguistic indeterminacy because they, like the messages they are designed to interpret, are communicated and implemented through words.[101] As with any message, interpretative rules may be clear only in typical cases.

In addition to standard rules of the English language, patent law uses context and canons of construction to interpret patent claims. These canons include the following:

1. Patent terms should not be construed contrary to their plain meaning.[102]
2. Patent terms should have consistent meaning throughout a patent.[103]
3. Patentees may be their own "lexicographers" and use terms idiosyncratically.[104]
4. Patent terms should not be construed in a manner that renders two claims identical in scope.[105]
5. A claim should not be construed to exclude an embodiment disclosed in the specification.[106]
6. Claims should be construed in light of the specification.[107]
7. Limitations in the specification should not be read into the claim.[108]

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100. Patent claims are typically only a single sentence long. Osenga, *supra* note 8, at 65.

101. HART, *supra* note 12, at 126; *see* Mullally, *supra* note 9, at 378.

102. Mullally, *supra* note 9, at 352.

103. *Id.*; *but see* Microprocessor Enhancement Corp. v. Texas Instruments Inc., 520 F.3d 1367, 1376-77 (Fed. Cir. 2008) (holding that a term used multiple times in a single claim could be interpreted inconsistently).

104. Robert Fram et al., *Claim Construction and Implicit Definitions Based on the Specification Since* Phillips, 8 SEDONA CONF. J. 65 (2007) (describing factors a court may consider in determining whether to implicitly limit the scope of claim terms).

105. Mullally, *supra* note 9, at 353; Osenga, *supra* note 8, at 75.

106. Mullally, *supra* note 9, at 353; *see also* Osenga, *supra* note 8, at 75.

107. Contropia, *supra* note 9, at 79 (quoting Slimfold Mfg. Co. v. Kinkead Indus., Inc., 810 F.2d 1113, 1116 (Fed. Cir. 1987)).

108. Mullally, *supra* note 9, at 352-53; Osenga, *supra* note 8, at 75; Contropia, *supra* note 9, at 80.

Because these canons are vague and often conflict with each other, they often do not provide clear guidance on claim construction.[109] For example, the role of the specification in construing the meaning of a claim term is indeterminate. On the one hand, claims should be construed in light of the specification (number 6 above), and the specification may indicate that a patentee acted as his or her own lexicographer and used a term idiosyncratically to be narrower than the term is usually defined (number 3 above). On the other hand, limitations from the specification should not be read into the claims (number 7 above). Reconciling these two canons is a challenge because the difference between a "limitation" and an idiosyncratic use is far from clear.[110]

Patent interpretation is also complicated by the requirement addressed above that claims are to be interpreted from the perspective of an idealized audience–a person having ordinary skill in the art (PHOSITA).[111] Developing this viewpoint may require substantial information beyond the patent, including the complete prosecution history,[112] treatises, dictionaries, and expert testimony. Furthermore, because a PHOSITA is considered to have total knowledge of all relevant prior art, it will be necessary to identify and to analyze relevant prior art.[113] In short, as a result of indeterminacy, there is no "rigid algorithm for claim construction,"[114] and "reasonable people can[, and often do,] differ"[115] on the proper scope of a patent.

Finally, the problems stemming from indeterminacies of language are magnified with patents because they are created using language. Patentees submit written patent applications to the USPTO,

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109. *See* Patrick J. Flinn, *Towards a Coherent Theory of Patent Claim Interpretation*, PATENT LITIGATION 2000 507, 513-14 (2000) (*available at* Westlaw as 619 PLI/PAT 507); *see also* Karl N. Llewellyn, *Remarks on the Theory of Appellate Decision and the Rules or Canons About How Statutes are to be Construed*, 3 VAND. L. REV. 395, 401 (1950) (arguing that canons of statutory construction are indeterminate because for every canon promoting one interpretation there is another canon supporting a conflicting construction). Commentators have also noted that the Federal Circuit's decisions regarding the proper process for claim construction have been inconsistent. *See* Osenga, *supra* note 8, at 64.

110. This conflict is well recognized. *See* Mullally, *supra* note 9, at 353; Osenga, *supra* note 8, at 75; Contrópia, *supra* note 9, at 81; Miller, *supra* note 53, at 205.

111. *See supra* notes 55-56 and accompanying text.

112. Patent prosecution is the process of applying for a patent and includes various administrative procedures of the USPTO.

113. Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc., 807 F.2d 955, 962 (Fed. Cir. 1986) ("The person of ordinary skill is a hypothetical person who is presumed to be aware of all the pertinent prior art.").

114. Phillips v. AWH Corp., 415 F.3d 1303, 1324 (Fed. Cir. 2005) (en banc).

115. *Id.* at 1329 (Lourie, J., concurring in part and dissenting in part).

where they are evaluated by a patent examiner who determines whether the application should be granted.[116] The inherent uncertainties of language may allow the examiner and the patentee to adopt different claim constructions, with only the examiner's construction supporting patentability. The examiner and the patentee, however, may be unaware of the differences in their constructions or may not create a record of it.[117] Indeed, the patentee may strategically include open-ended language that enables the examiner to adopt a narrow, valid construction while also allowing the patentee to argue a broad, but invalid, construction in a later patent infringement dispute.[118] Even if the court rejects the patentee's construction, it may arrive at a construction different from the examiner and on which the examiner would have denied the patent application.

3. The Need to Broaden Patent Scope Beyond Specific Embodiments

An invention typically will be broader than the particular facts of its discovery. For example, an inventor might understand that a nail, screw, or staple would be equally appropriate to solve a problem in a project, but elect to use a nail merely because it was convenient. Patent protection should not be limited to using a nail, however, because patent scope should be commensurate with the invention's contribution to "the Progress of Science and useful Arts," and not restricted by decisions based on unrelated criteria, such as convenience.[119] This concept is captured in patent law by the distinction between inventions and embodiments of that invention.[120] The use of a nail is an aspect of one specific embodiment of the more general invention, which encompasses the use of a nail, screw, or staple. Patentees are required by statute to disclose the best

116. 35 U.S.C. §§ 111, 131 (2000).

117. *See* BESSEN & MEURER, *supra* note 8, at 55, 226 (noting that "patent examiners do not record their interpretation of the boundaries of the patent").

118. *See* Long, *supra* note 18, at 506 ("Because one way to reduce the costs of agreement is to agree on less, patentees and examiners may leave patent language ambiguous so as to reach an outcome faster."). Patent examiners generally cannot provide their interpretations of patent claims in later infringement litigation. 37 C.F.R. § 104.23 (2007).

119. *See* Cotropia, *supra* note 9, at 106-07 (discussing cases that correlate patent protection with the scope of the invention); Long, *supra* note 18, at 480 (defining the innovative contribution of an invention as the difference between the invention and the prior art); Merges & Nelson, *supra* note 47, at 845-48 (noting the importance of patents covering "minor variations" on the inventor's work).

120. *See* BESSEN & MEURER, *supra* note 8, at 199.

embodiment–called the "best mode"–for practicing the invention.[121] Patentees are also required to provide sufficient written description of the more general invention to demonstrate that it was firmly held within the patentee's mind at the time the application was submitted.[122] The distinction between the invention and its embodiments is also important in claim construction. The Federal Circuit has noted that, courts should not "confine their definitions of terms to the exact representations depicted in the embodiments" listed in the specification.[123]

Thus, in order to correlate patent protection with the scope of the invention, patent rights must be broadened beyond the initial embodiment that led to the filing of a patent application.[124] Patent law provides for implicit and explicit broadening, but both approaches engender substantial uncertainty. First, patent scope is implicitly expanded through the Doctrine of Equivalents. Literal infringement of patent is shown when an accused device or process practices every element of a patent claim.[125] The Doctrine of Equivalents, in contrast, expands patent protection to devices and process that are technically different but substantively equivalent.[126] The doctrine measures equivalency element by element and provides that a device or process infringes a patent even if the device or process contains elements that insubstantially differ from the elements of the patent.[127] Under this approach, elements are equivalent if they perform the same function

121. *See* 35 U.S.C. § 112 (2000).

122. *See* 35 U.S.C. § 112 (2000); *see also* Vas-Cath Inc. v. Mahurkar, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991) (noting that the written description requirement of § 112 provides that the applicant must "convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention").

123. Phillips v. AWH Corp., 415 F.3d 1303, 1323 (Fed. Cir. 2005) (en banc).

124. Miller, *supra* note 53, at 184 ("To specify the full range of marketplace conduct that a patent claim empowers the patentee to exclude, we confront a tension that arises necessarily from trying to grasp the world of things–actual inventions in real space–with words.").

125. ACCO Brands, Inc. v. Micro Sec. Devices, Inc., 346 F.3d 1075, 1080 (Fed. Cir. 2003).

126. *See* Thomas, *supra* note 58, at 156 (noting that the Doctrine of Equivalents "expand[s] the reach of a patent's claims beyond their literal language"); *see also* Miller, *supra* note 53, at 185 ("The scope of a patent is not limited to its literal terms but instead embraces all equivalents to the claims described" (quoting Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 535 U.S. 722, 730-32 (2002))); Lichtman, *supra* note 13, at 152.

127. *See* Thomas, *supra* note 58, at 157 (discussing the requirement that equivalency be measured element by element); Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 520 U.S. 17, 29 (1997).

in the same way to achieve the same result.[128] For example, if a patent claim described the use of a nail to connect two things, a court might find equivalent the use of a screw.[129] Absent this doctrine, competitors could avoid infringement through minor changes to the claimed invention, like substituting a screw for a nail.[130] Consequently, the Doctrine of Equivalents improves the correlation between patent scope and the inventor's contribution to "the Progress of Science and useful Arts." The Doctrine of Equivalents, however, is an imprecise and uncertain means of expanding patent scope because resolving disputes regarding whether two different activities should be considered "equivalent" often requires litigation.[131] This uncertainty places substantial costs on patent audiences, including both the costs of attempting to apply the doctrine and the costs from erroneously determining the extent to which the doctrine expands a patent beyond its literal scope.[132]

The second mechanism for broadening patent scope is that patent applicants can explicitly use broad claim terms to correlate patent scope with innovation.[133] For example, if an inventor used a nail in the initial embodiment of an invention, the inventor might file a patent application referencing a "connector" so that it will not be

128. Warner-Jenkinson Co., 520 U.S. at 39. The elements of the patent are atomistic concepts, and a single claim limitation may contain multiple elements. *See, e.g., id.* at 32 (characterizing as a separate "element" a number in range in a phrase in a claim limitation).

129. Burk & Lemley, *supra* note 74, at 37.

130. *See* Thomas, *supra* note 58, at 156.

131. *See* BESSEN & MEURER, *supra* note 8, at 61; Thomas, *supra* note 58, at 156, 169-75; Lichtman, *supra* note 13, at 152; Kieff, *supra* note 14, at 109-110.

132. BESSEN & MEURER, *supra* note 8, at 61-62; Warner Jenkinson, 520 U.S. at 29 ("There can be no denying that the doctrine of equivalents . . . conflicts with the definitional and public notice functions of the statutory claim requirement."); *see supra* notes 63-67 and accompanying text.

133. Patentees may also use broad, open-textured terms in an attempt to convince an examiner to allow a patent to issue, rather than to more accurately describe their invention. BESSEN & MEURER, *supra* note 8, at 239; Long, *supra* note 18, at 506; Bender, *supra* note 13, at 210-11. The patent examiner might construe an unclear term in a patent application narrowly so that it excludes prior art from the scope of the claims and use this construction to allow the patent to issue. BESSEN &. MEURER, *supra* note 8, at 57 (noting that "patent applicants sometimes game the system by drafting ambiguous patent claims that can be read narrowly during examination such that they avoid a novelty rejection"); Bender, *supra* note 13, at 190. Although a patent examiner has a duty to evaluate a draft claim in a patent application using the broadest reasonable interpretation, *Springs Window Fashions LP v. Novo Indus., L.P.*, 323 F.3d 989, 995 (Fed. Cir. 2003), a patent examiner may nevertheless use a narrower construction than later used by a patent owner in litigation. Indeed, different patent examiners are more prone to require alterations of claim language, which indicates that different examiners tend to interpret claims differently. Lichtman, *supra* note 13, at 155, 170.

limited to a nail.[134] Because patent applicants must always describe at least one embodiment of the invention, such as the best mode of practicing the invention,[135] a patentee who uses broad claim terms can supplement the Doctrine of Equivalents by providing additional information regarding the invention in the form of a more general description.[136] In this way, broad claim terms are a small but meaningful enhancement to communication regarding patent scope.[137] Perhaps for this reason, patent law encourages the use of broad claim terms. For example, if a patentee's specification covers material that could have been claimed–but was not–the patentee cannot later claim that foregone patent scope.[138] That portion of the invention may pass into the public domain.

Despite its advantages, however, the use of broad claim terms also engenders uncertainty regarding claim scope. Although all words have uncertain meanings beyond their prototypical cores,[139] the breadth of this uncertain margin will generally be larger with broader terms as opposed to narrower terms. For example, the uncertain margin for "connector" may include the uncertain margins for "nail," "screw," and "glue." Broad terms therefore are particularly amenable to different interpretations. Using broad claim terms can also lead to uncertainty regarding patent scope because language often broadens in jumps, rather than along a smooth gradient.[140] For example, if the initial embodiment of an invention utilizes a nail to connect two

134. Kieff, *supra* note 14, at 111-12; *see, e.g.*, BESSEN & MEURER, *supra* note 8, at 205 (giving an example of the use of broad claim terms).

135. 35 U.S.C. § 112 (2000).

136. *See also* Lichtman, *supra* note 13, at 152 (arguing that the Doctrine of Equivalents applies when claim language is imprecise). For a discussion of proposals that seek to reduce reliance on the Doctrine of Equivalents in favor of providing greater certainty regarding the literal scope of patent claims, see generally Thomas, *supra* note 58, at 169-75.

137. The use of broad claim terms may reduce uncertainty more than reliance of the Doctrine of Equivalents because the former is more explicit than the latter. It is doubtful, however, that the Doctrine of Equivalents could be eliminated through explicit claiming without undermining innovation. *See* Lichtman, *supra* note 13, at 177 n.59; *see also* Smith, *supra* note 18, at 1182 (noting that "elimination of possibilities of misunderstanding will be subject to falling marginal benefits and increasing marginal costs, and the goal is to try to equate them, *not* to eliminate the potential for misunderstanding completely").

138. Thomas, *supra* note 58, at 159-60.

139. *See* supra Parts III.A.1 and III.A.2.

140. *See* BESSEN & MEURER, *supra* note 8, at 195 (discussing the difficulty in construing the scope of abstract patent terms); *see also* Smith, *supra* note 94, at 1755 (noting that there is "some indeterminacy around the edges" of patents); HOHFELD, *supra* note 18, at 30 ("Much of the difficulty, as regards legal terminology, arises from the fact that many of our words were originally applicable only to physical things; so that their use in connection with legal relations is, strictly speaking, figurative or fictional." (footnote omitted)).

pieces of material, to capture a slightly different embodiment that uses screws, staples, or rivets instead of nails, the patentee may use a term broader than "nail," such as "connector." This broad term, however, may include cases that are not materially the same as the motivating embodiment. "Connector" includes many concepts different from nails, screws, staples, and rivets, such as glue, Velcro, magnetism, and gravity. Some of these means of connecting may go beyond the invention.

Certain rules of interpretation can reduce this uncertainty. For example, ambiguous claim terms may be construed narrowly: "Where there is an equal choice between a broader and a narrower meaning of a claim, and there is an enabling disclosure that indicates that the applicant is at least entitled to a claim having the narrower meaning, [a court may] consider the notice function of the claim to be best served by adopting the narrower meaning."[141] Moreover, if a claim is "insolubly ambiguous, and no narrowing construction can properly be adopted, [a court may hold] the claim indefinite" and thus invalid.[142] Another rule of patent law facilitates the use of broad terminology, while simultaneously correlating patent scope with the scope of the invention, by allowing patentees to implicitly redefine a word to be narrower than the word's ordinary meaning.[143] For example, as noted above, a patent applicant may use a nail in the initial embodiment of an invention, and then use the broader term "connector" in the patent application. If, throughout the patent specification, the applicant describes connectors in the invention as puncturing, piercing, and making holes, a court might later construe "connector" to exclude glue, even though glue is a type of connector.[144] In such a case, the court might conclude that the patentee and the examiner understood "connector" to be limited to mechanisms that bonded by physical rather than chemical means, and that the patentee acted as a

141. Athletic Alternatives, Inc. v. Prince Mfg., Inc., 73 F.3d 1573, 1581 (Fed. Cir. 1996); *see* Hubbard, *supra* note 7, at 424.

142. Exxon Research & Eng'g Co. v. United States, 265 F.3d 1371, 1375 (Fed. Cir. 2001). Courts rely on indefiniteness in only 5.8% of patent invalidations. John R. Allison & Mark A. Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 AIPLA Q.J. 185, 208 (1998); *see also* Pharmastem Therapeutics, Inc. v. Viacell, Inc., 491 F.3d 1342, 1373 (noting that a claim is not indefinite if "one skilled in the art would understand the bounds of the claim when read in light of the specification." (quoting Miles Labs., Inc. v. Shandon, Inc., 997 F.2d 870, 875 (Fed. Cir. 1993))).

143. Patent protection cannot be extended beyond the scope of invention. Inpro II Licensing, S.A.R.L. v. T-Mobile USA, Inc., 450 F.3d 1350, 1355 (Fed. Cir. 2006).

144. *See* Fram et al., *supra* note 104 (describing factors a court may consider in determining whether to implicitly limit the scope of claim terms).

lexicographer to redefine more narrowly the word "connector" for the purposes of the patent. The implicit limitation of claim terms has drawbacks similar to the problems of implicit broadening of patent scope through the Doctrine of Equivalents. Implicit limitation of broad terms involves substantial interpretation of patent claims in light of the specification and disagreements regarding interpretations may develop that can only be resolved through litigation.[145]

B. Analogies Between Patents and Other Legal Communications

Courts and commentators often contend that a high level of ex ante clarity is achieved in legal communications in such diverse areas as real property boundaries, contracts rights, and statutes, and that, therefore, patents can likewise be made clearer ex ante by changes in the law.[146] These comparisons between patents and other legal instruments are misguided both because they do not recognize the patent-specific obstacles to communication and because they overstate the clarity in other legal instruments.[147] As a result, such comparisons not only often fail to provide meaningful insight into improving communications regarding patent scope but also may result in inefficiency and confusion.[148]

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145. Miller, *supra* note 53, at 204; Thomas, *supra* note 58, at 162-63. The uncertainty resulting from implicit limitations on broad claim terms can be–and sometimes is–reduced through more explicit claim language. Explicit yet broad claim terms cannot, however, eliminate all uncertainty. In addition to the obstacles to drafting explicit claims noted above, see *supra* Parts III.A.1 and III.A.2, identifying the need for explicit limitations is difficult to anticipate ex ante (that is, before the patent issues) because, unless a patent applicant and examiner disagree about the scope of a term, the need for clarification may not be identified until after the patent issues. Indeed, patentees and patent examiners are more likely to agree on the contextual, limited meaning of a term because their communication is more personal than a formal communication mediated only by the words of a patent. *See* Smith, *supra* note 18, at 1131.

146. BESSEN & MEURER, *supra* note 8, at 30-33 (critiquing patent law for not providing notice of boundaries as clear as real property law); Mullally, *supra* note 9, at 339 n.33 (contending that statutes and contracts "are particularly useful analogues to patents"); Osenga, *supra* note 8, at 70 ("Claim construction, in many respects, is not unlike the processes of statutory and contract interpretation that are well-worn provinces of the district court judge."); Burk & Lemley, *supra* note 74, at 50-51 (discussing comparisons between claim construction and statutory and contractual interpretation); Lichtman, *supra* note 13, at 152 (noting that patent claim interpretation "bears an obvious resemblance to a perhaps more familiar question in statutory interpretation").

147. *But see* Lefstin, *supra* note 8, at 1092 (arguing that claim interpretation is no more indeterminate that contract interpretation). For a short critique of Lefstin's study, *see supra* note 96.

148. *See* LAWRENCE LESSIG, THE FUTURE OF IDEAS: THE FATE OF THE COMMONS IN A CONNECTED WORLD 95 (2001) (arguing that "real harm" may arise from applying to intellectual property the "systems of control" used for physical property).

1. Patents and Real Property

Courts frequently compare patent scope to the "metes and bounds" of real property,[149] suggesting that the former is or should be as clear as the latter. The metes and bounds of real property, however, describe boundaries in the current, observable world and therefore do not suffer from the indeterminacy of fact involved with patents. [150] The location of these physical boundaries can usually be known as a fact, and thus does not suffer from any need for "broadening."[151] When combined with the relatively easily applied *ad ceolum* rule, these boundaries can be translated into three dimensions by a "rigid algorithm."[152] Moreover, the extent to which unknown facts can be relevant is circumscribed in a fashion entirely dissimilar to patents; real property is frequently developed substantially within the boundaries, not right along its edges. Indeed, development close to the boundaries of real property may be prohibited by law, as with

149. Brenner v. Manson, 383 U.S. 519, 534 (1966); Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 234 F.3d 558, 622 (Fed. Cir. 2000) ("In drafting an original claim of a patent application, the writer sets out the metes and bounds of the invention . . . ."); Burke, Inc. v. Bruno Indep. Living Aids, Inc., 183 F.3d 1334, 1340 (Fed. Cir. 1999) ("A claim in a patent provides the metes and bounds of the right which the patent confers on the patentee to exclude others from making, using or selling the protected invention." (quoting Corning Glass Works v. Sumitomo Elec. U.S.A., Inc., 868 F.2d 1251, 1257 (Fed. Cir. 1989))); Scaltech Inc. v. Retec/Tetra, L.L.C., 178 F.3d 1378, 1383 (Fed. Cir. 1999) (stating that "a claim in a patent provides the metes and bounds of the right which the patent confers on the patentee to exclude others from making, using, or selling the protected invention"); Hoechst-Roussel Pharms., Inc. v. Lehman, 109 F.3d 756, 758 (Fed. Cir. 1997); Thomas & Betts Corp. v. Panduit Corp., 65 F.3d 654, 660 (7th Cir. 1995) ("In the patent 'bargain,' the claims define what the patentee receives, the 'metes and bounds' from which he can exclude competitors."); Markman v. Westview Instruments, Inc., 52 F.3d 967, 1000 (Fed. Cir. 1995) (en banc) ("The legal effect of the patent claim is to establish the metes and bounds of the patent right to exclude; this is a matter of law."); *In re* Warmerdam, 33 F.3d 1354, 1360 (Fed. Cir. 1994) ("It is the claims which define the metes and bounds of the invention entitled to the protection of the patent system."); Zenith Labs., Inc. v. Bristol-Myers Squibb Co., 19 F.3d 1418, 1424 (Fed. Cir. 1994) ("It is the claim that sets the metes and bounds of the invention entitled to the protection of the patent system."); *see also* Lefstin, *supra* note 8, at 1025 ("A patent's claims define with words the limits of the inventor's exclusive rights, just as physical boundaries may define the limits of real property rights.").

150. *See* Long, *supra* note 18, at 482-83 (noting that measuring the boundaries of real property is easier than with patents because real property is tangible).

151. Descriptions of a parcel of land within a deed can be ambiguous, but property law relies on clear default rules to resolve such uncertainty, favoring monuments in the descriptions of a boundary over descriptions of a course of travel, courses of travel over measurements of distances, and distances over quantities like acreage. Hubbard, *supra* note 7, at 406. When ambiguity or vagueness regarding a boundary for real property cannot be resolved, moreover, property law does not require that the owner forfeit rights to the entire parcel of land on the grounds that it is "invalid."

152. Phillips v. AWH Corp., 415 F.3d 1303, 1324 (Fed. Cir. 2005) (en banc).

mandatory set-backs.[153] As a result, uncertainty in the location of those boundaries is relatively unlikely to be material.[154] Patents, in contrast, lack such a bias away from boundaries. Compared to real property, patent infringement is more likely to occur in the uncertain margin beyond prototypical examples.[155]

The metes and bounds of real property also do not suffer from any meaningful indeterminacy of aim because the aim in the portion of the deed describing the boundaries is to describe the current physical scope of the parcel in terms of easily identified, unchanging measurements.[156] The boundary description in a deed does not describe the full contours of the owner's rights, such as the activities within the boundaries that the owner can engage in or prohibit.[157] Patents, on the other hand, aim to describe exactly that: *activities* by third parties that infringe the patent.[158] Aiming at those activities while ignorant of the facts of some of those activities is far more difficult than simply describing particular physical boundaries.[159] Thus, comparing patents to parcels of land misrepresents the potential for clear and certain patent claims.[160] It is more apt to compare patents

153. DONALD G. HAGMAN & JULIAN CONRAD JUERGENSMEYER, URBAN PLANNING & LAND DEVELOPMENT CONTROL LAW § 4.8 (2d ed. 1986).

154. Furthermore, when real property will be developed near its boundaries, greater resources can be spent to improve certainty regarding boundary location before such development. Such ex ante determinations are not possible with patents. *See supra* notes 85-94 and accompanying text.

155. *See supra* notes 85-94 and accompanying text.

156. *See generally* ANDRO LINKLATER, MEASURING AMERICA: HOW AN UNTAMED WILDERNESS SHAPED THE UNITED STATES AND FULFILLED THE PROMISE OF DEMOCRACY (2002) (describing the importance of measuring techniques to systems of real property). Where boundaries change, for example by accretion or erosion in coastal lands, there are clear default rules. JOSEPH J. KALO ET AL., COASTAL AND OCEAN LAW: CASES AND MATERIALS 44-52 (2d ed. 2002).

157. Moreover, boundaries describe only the "outline" of the property, not the full contours of its interior. *See* Long, *supra* note 18, at 484. Land is also "well ordered" in that a trespasser cannot somehow occupy a space interior to a boundary without crossing a property boundary. With patents, such notions of boundaries are inapplicable.

158. *See* Long, *supra* note 18, at 499 (noting that patents "provide a thick description of qualitative aspects of the invention").

159. *See* Ellickson, *supra* note 7, at 1327-28 (describing the reduction in monitoring costs produced by clear boundaries). Henry Smith has argued that the regulation of the uses of property can be placed on a spectrum from exclusion, which involves the use of boundaries as rough proxies for activities, to governance, which addresses particular activities and particular actors. Henry E. Smith, *Exclusion Versus Governance: Two Strategies for Delineating Property Rights*, 31 J. Legal Stud. 453, 455 (2002). Governance of activities is more fine-grained but can be more expensive than exclusion based on physical boundaries. *Id.* (noting that governance strategies place a higher informational burden on duty holders).

160. Moreover, the Patent Act makes it clear that, absent contrary statutory provisions, patents are to be treated as personal property. 35 U.S.C. § 261 (2000).

with the activity limitations involved in real property, such as zoning, which requires boards and commissions to address, in an ex post context, specific issues raised by broad categorical rules. Furthermore, because the average audience size for communicating the boundaries of real property is likely much larger than for patents, many communication costs can be amortized over this large group. Even though the audience for real property may be geographically limited, many different types of persons in that location may be involved in communications, particularly since real property has no temporal term, unlike patents.[161] Finally, communications regarding real property justify greater investment in clear messages ex ante. Most real property is valuable, and that value can justify investment, like signs and fences, to provide a clear boundary definition. In contrast, the vast majority of patents do not produce any revenue, and, thus, additional investment in boundary definition regarding many patents cannot be justified.[162]

2. Patents and Contracts

Contracts enjoy substantial communication advantages over patents. One advantage with contracts is that the parties to a contract dispute are typically the same parties involved in the contract's formation. For example, the core of a contract is the parties' "meeting of the minds," which *both* parties will want to memorialize clearly.[163] If a dispute arises regarding the meaning of a contract term, both parties can provide evidence regarding the "meeting of the minds." With a patent, however, a patent examiner is involved in the creation of the patent and an alleged infringer is involved in a later dispute regarding patent scope. Federal regulations prevent the patent examiner from being involved in later patent infringement proceedings,[164] and a potential future infringer has no right to

161. Smith, *supra* note 18, at 1184. In one sense, the life of a patent is not limited in that, once a patent owner's rights expire, the patent passes to the public at large. The patentee, however, does not internalize a meaningful portion of those benefits, and therefore likely does not consider those benefits when incurring costs communicating the scope of the patent.

162. Mark A. Lemley has estimated that only 5% of patents produce revenue. Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1507 (2001). Other scholars have also argued that most patents do not have value. *See, e.g.*, BESSEN & MEURER, *supra* note 8, at 100 ("This suggests that the majority of patents are not worth more than a few thousand dollars.").

163. Smith, *supra* note 18, at 1136. *But see id.* (noting that some scholars interpret contract negotiation as "rife with conflict").

164. 37 C.F.R. § 104.23 (2007) (prohibiting employees of the United States Patent and Trademark Office from providing "expert testimony in any legal proceedings regarding Office

participate in the prosecution of the patents, particularly since the patent applications are initially confidential.[165] Even if there were such a right, the identity of an alleged infringer may not be known until the time of infringement, which could be years after the patent has issued.

In addition, parties to a contract can afford to expend greater resources drafting detailed and clear messages that promote certainty. A rational person will work to enhance the certainty of the terms of a contract until the marginal costs of such efforts exceed their marginal benefits. Because the vast majority of contracts provide some benefit to the parties, the marginal benefit of increased certainty is non-trivial, and some meaningful effort may be spent on improving the certainty of the contract. Contracts can take months and many thousands of dollars to negotiate, and this investment is justified by the expected benefits from the contract. In contrast, because most patents do not yield any revenue, patentees cannot afford to invest as much money in drafting and prosecuting patents.[166]

Finally, the certainty regarding contracts should not be overstated. Contracts undoubtedly include unclear language at times, and many contract disputes often center on disagreements regarding the meaning of contract terms.[167] Moreover, contract law provides for some adjustment of contractual terms after the contract has been entered based on unforeseen future events. For example, when unforeseen circumstances arise, a court may construe a contract to include terms that the parties would have negotiated had the circumstances been known at the time the contract was signed.[168]

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information, subjects or activities"). In certain limited contexts, the examiner's interpretation may be inferred. For example, if there is a strong inference that "the PTO would have recognized that one claim interpretation would render the claim invalid, and that the PTO would not have issued the patent assuming that to be the proper construction of the term," a court may decide that the claim should not receive that construction. Phillips v. AWH Corp., 415 F.3d 1303, 1328 (Fed. Cir. 2005) (en banc); *see also* BESSEN & MEURER, *supra* note 8, at 226 (recommending that patent examiners start recording the interpretation of claims that they use to decide patent validity).

165. 35 U.S.C. § 122 (2000).

166. Contracts may also rely on "standardized" terminology. Smith, *supra* note 18, at 1149. The meaning of such terms are largely established before the contract is signed, and, to the extent that further clarification of that terminology is required, those costs can be amortized over all contracts using those standardized terms.

167. *See, e.g.*, InterDigital Commc'ns Corp. v. Nokia Corp., 407 F. Supp. 2d 522, 529-30 (S.D.N.Y. 2005) (involving a contract dispute regarding, *inter alia*, the meaning of the term "the assets").

168. Herbert Rosenthal Jewelry Corp. v. St. Paul Fire & Marine Ins. Co., 249 N.Y.S.2d 208, 214 (N.Y. App. Div. 1964); RESTATEMENT (SECOND) OF CONTRACTS § 204 (1981) ("When the parties to a bargain sufficiently defined to be a contract have not agreed with respect

Similarly, under the doctrine of Frustration of Purpose, courts may sometimes excuse a party from performing contractual obligations that have been affected by unforeseen events.[169]

3. Patents and Statutes

It is tempting to analogize patents to statutes because statutes suffer from some of the same communication weaknesses as patents. Statutes are often designed to apply in varied factual circumstances. Consequently, like patents, statutes frequently utilize broad, open-textured terms. Moreover, legislators may agree only regarding broad concepts and disagree regarding specific details, so that less detailed language may therefore be more likely to gain majority support.[170] For these (and perhaps other) reasons,[171] the language in statutes is often extremely open-textured.[172] In this respect, comparisons between patents and statutes do not suggest that the scope of patents should be made clearer.

Despite these similarities, statutes enjoy important communication advantages that patents lack. First, Congress can afford to expend more resources drafting and critiquing statutes than patentees can spend drafting patents. In 2006, the USPTO received more than 417,000 new patent applications[173] and issued more than 180,000 patents.[174] In contrast, in 2006 the 109th Congress–which had Republican majorities in both the House of Representatives and the Senate during a Republican presidency–managed to pass only 249

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to a term which is essential to a determination of their rights and duties, a term which is reasonable in the circumstances is supplied by the court.").

169. *In re* Schenck Tours, Inc., 69 B.R. 906, 911 (Bankr. E.D.N.Y. 1987); *In re* M & M Transp. Co. v. Schuster Express, Inc., 13 B.R. 861, 869 (Bankr. S.D.N.Y. 1981); Farlou Realty Corp. v. Woodsam Assocs., 49 N.Y.S.2d 367, 371 (N.Y. Sup. Ct. 1944).

170. *See, e.g.*, Chevron U.S.A, Inc. v. Natural Res. Def. Counsel, Inc., 467 U.S. 837, 865 (1984) (stating that one reason that Congress might have used uncertain language might have been that "Congress was unable to forge a coalition on either side of the question"); *cf.* Long, *supra* note 18, at 506 (discussing the same phenomena with patents).

171. A full discussion of the reasons for uncertainty in the drafting of legislation is beyond the scope of this article.

172. Statutes often require substantial interpretation to determine their precise meaning. HART, *supra* note 12, at 131-32; Mullally, *supra* note 9, at 363.

173. U.S. PATENT & TRADEMARK OFFICE, *Performance and Accountability Report Fiscal Year 2006*, USPTO ANNUAL REPORTS (2006), *available at* http://www.uspto.gov/web/offices/com/annual/2006/3020100_patentperfrm.html; *see also* Miller, *supra* note 53, at 197 (reporting that the USPTO receives more than 300,000 patent applications every year).

174. This figure was obtained by running a search on the USPTO's official website for patents issuing in the year 2006. *See* http://patft.uspto.gov (click the "Advanced Search" link in "Issued Patents" section; query using the text "isd/20060101->20061231").

bills and 1,345 measures.[175] With far fewer laws being passed compared to patents, the legislators can divert substantially more resources to ensuring statutory clarity, provided they have the political will to do so.[176] In addition, interested parties can lobby the legislature to address their concerns, including concerns about clarity of meaning.

Second, though the scope of a term in a statute is often clarified long after the statute is passed, there is a more robust, institutionalized scheme for this process than in the case of patents. Words and phrases in statutes are frequently interpreted by courts, and these interpretations carry the force of precedent. For example, 42 U.S.C. § 1988 provides that a court may award "reasonable" attorney's fees to a "prevailing party" (except a government party) in an action brought under 42 U.S.C. § 1983 regarding the deprivation of any rights, privileges, or immunities secured by the Constitution. In complex litigation involving multiple claims, however, it may be unclear whether a party has "prevailed." Courts have accordingly elaborated on the meaning of this term.[177] These cases do not merely decide the meaning of this term in individual instances. Through stare decisis, these decisions have created a robust rule for interpreting "prevailing" in future cases as well. Furthermore, courts attempt to provide further clarity by similarly construing the same terms in different statutes.[178] For example, courts typically treat "prevailing party" and "reasonable" fee provisions the same in § 1988 and other statutes, including § 285 of the Patent Act.[179] This effort to promote

175. The Senate publishes reports of Congressional efforts at http://www.senate.gov/pagelayout/reference/two_column_table/Resumes.htm. The Congressional resume for the 2006 session of the 109th Congress is available at http://www.senate.gov/reference/resources/pdf/109_2.pdf.

176. At the end of 2006, the USPTO employed 4,883 patent examiners, see U.S. PATENT & TRADEMARK OFFICE, *Performance and Accountability Report Fiscal Year 2006, Table 28: End of Year Personnel*, USPTO ANNUAL REPORTS (2006), *available at* http://www.uspto.gov/web/offices/com/annual/2006/50328_table28.html, whereas Congress is composed of 100 Senators and 435 members of the House of Representatives. Although the number of patent examiners is nearly 10 times the number of legislators, the number of patent applications filed in 2006 is more than 250 times the number of bills and measures passed in 2006. Moreover, legislators often employ substantial networks of support staff.

177. Buckhannon Bd. & Care Home, Inc. v. W. Va. Dep't. of Health & Human Res., 532 U.S. 598, 603 (2001); Highway Equip. Co. v. FECO, Ltd., 469 F.3d 1027, 1035 (Fed. Cir. 2006); Inland Steel Co. v. LTV Steel Co., 364 F.3d 1318, 1320 (Fed. Cir. 2004).

178. *See* Kaplow, *supra* note 36, at 577-79.

179. 35 U.S.C. § 285 (2000); Highway Equip. Co., 469 F.3d at 1035 (noting that "prevailing party" has a similar meaning for the purposes of § 285 of the Patent Act, 28 U.S.C. § 1988, and Fed. R. Civ. P. 54). Copyright law also provides for the award of "reasonable" fees to the "prevailing party" in some cases. 17 U.S.C. § 505 (2000).

consistency provides greater certainty regarding the meanings of statutes and clarification costs can be amortized over many cases.[180]

Administrative agencies address indeterminate portions of statutes through administrative adjudication.[181] Agencies also create new messages regarding the scope of legislation through administrative rulemaking.[182] In fact, agencies are considered particularly adept when interpreting and elaborating on Congress's statutory messages. Under the *Chevron*[183] Doctrine, administrative agencies are given substantial deference when construing a statute that the agency administers.[184] When the meaning of a statute is unclear, the agency's interpretation prevails if it is "a permissible construction of the statute," that is, unless the construction is "arbitrary, capricious, or manifestly contrary to the statute."[185]

In contrast, patent law provides only two types of post-issuance administrative review of patents–reissuance and reexamination–and neither of these administrative procedures provides meaningful opportunities to clarify patent scope. Reissue procedures only allow a patent owner to correct inadvertent "mistakes" that render the patent "wholly or partly inoperative or invalid."[186] Though such corrections may occasionally clarify the scope of a patent, uncertainty in patent claims is often inherent and not a mistake. Moreover, reissuance proceedings can only be brought by the patent owner,[187] and thus cannot help potential infringers resolve uncertainty about the scope of a patent. In reexamination proceedings, the patentee or a third party requests that the USPTO review an issued patent regarding a "substantial new question of patentability."[188] In responding to the reexamination, the patentee can amend the patent. Though the

180. H.L.A. Hart has cautioned that identically applying the same terms in different statutes–creating a "heaven of concepts"–may prevent a statute from meeting its legislative aims, in some cases. HART, *supra* note 12, at 130.

181. *See, e.g.*, INS v. Aguirre-Aguirre, 526 U.S. 415, 418, 424 (1999) (discussing the Board of Immigration Appeals's interpretation of a federal statute).

182. Chevron, U.S.A., Inc. v. Natural Res. Def. Council, Inc., 467 U.S. 837, 843-44 (1984).

183. *Id.*

184. *Id.*; *see also* Aguirre-Aguirre, 526 U.S. at 424 (granting *Chevron* "deference" to an interpretation of a statute in administrative adjudication). This authority does not apply when Congress has addressed the precise question at issue. Only when there is some uncertainty–as in cases that are not plain or prototypical–will agencies enjoy deference.

185. Chevron, 467 U.S. at 843-44.

186. 35 U.S.C. § 251 (2000); *see also* 35 U.S.C. § 252 (2000).

187. *See* 37 C.F.R. § 1.176 (2000) (noting that reissue proceedings will proceed "in the same manner as a non-reissue, non-provisional application").

188. 35 U.S.C. § 303 (2000).

amendment might be clearer than the original patent, particularly because it can be contrasted with the unamended patent, such "clarifying" amendments are merely coincident to the patentability challenge and may not occur. More importantly, an amendment *changes* the patent scope instead of *clarifying* the scope of the original patent.

The vast majority of clarification of patent scope occurs ex post through judicial interpretation of patents.[189] Such adjudication is, however, different from the judicial interpretation of statutes in at least two respects. First, interpretation of claim terms is expensive compared to statutory interpretation. Many statutes are central to multiple lawsuits, and the cost to the courts (and other repeat players) of interpreting statutory language can be amortized over multiple applications of that statute. In contrast, relatively few patents are addressed in multiple lawsuits.[190] Consequently, there is less opportunity to amortize the cost of judicial interpretation. Second, judicial interpretation of statutes is viewed as part of the system, not as a reason, sufficient by itself, to impose radical changes on the process of creating statutes. In contrast, critics of patent law argue that patent claims need to be clearer in order to *avoid* the need for post-issuance interpretation through litigation.[191]

C. Inefficiency of Relying Solely on Ex Ante Clarification

For any given set of interpretive rules, the creation of clearer, more detailed messages requires additional investment by the party creating and sending those messages. As a result, drafting more explicit patents and patent claims requires additional investment by patentees and may require additional work on the part of patent examiners as well. These additional costs will not be efficient unless they are outweighed by the benefits they produce. However, it

189. In 2007, approximately 770 reexamination proceedings and 994 reissue proceedings were initiated. U.S. PATENT & TRADEMARK OFFICE, PERFORMANCE AND ACCOUNTABILITY REPORT: FISCAL YEAR 2007 110, 121 (2008), *available at* http://www.uspto.gov/web/offices/com/annual/2007/2007annualreport.pdf. In contrast, more than 2,500 patent suits are initiated each year. BESSEN & MEURER, *supra* note 8, at 122. More importantly, reexamination and reissue proceedings focus on validity and therefore provide little opportunity for clarification of patent scope. *See supra* notes 186-188 and accompanying text.

190. Phillips v. AWH Corp., 415 F.3d 1303, 1332 (Fed. Cir. 2005) (en banc) (Mayer, J., dissenting).

191. *See, e.g.*, Mullally, *supra* note 9, at 380 (arguing that the cost of increased disclosure in patents may be "offset in the avoidance of greater costs to the public and the avoidance of litigation" (footnote omitted)); Kieff, *supra* note 14, at 110 (arguing that the cost to patentees of improved drafting "are substantially less than those associated with litigating").

appears that there will be no benefit in most instances because so few patents ever yield any value to the patentees. Mark Lemley estimates that only 5% of patents ultimately provide any revenue to owners.[192] Given this percentage, ex ante efforts would be inefficient unless the average benefit added to patents through these efforts was, by one estimation, at least *twenty times* their average cost.[193] Though other estimates are more conservative, they are consistent with the lack of substantial economic value of most patents. James Bessen and Michael J. Meurer report that more than half of all patents expire prematurely because their owners are unwilling to pay renewal fees. "This suggests that the majority of patents are not worth more than a few thousand dollars."[194] Because ex ante measures for improved communication of patent scope must produce a high return on investment, such proposals should not be implemented absent compelling support demonstrating a high ratio of average benefits to average costs.[195]

Another reason it is often inefficient to invest additional resources improving the quality of the messages sent regarding patent scope is that patent communications provide relatively little opportunity for the amortization of such costs. Patents communicate to a relatively small audience because they are intended to be read and interpreted only by practitioners in a certain technical field.[196]

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192. Lemley, *supra* note 162, at 1507; *see also* Thomas, *supra* note 58, at 166 (discussing Lemley's conclusions); Miller, *supra* note 53, (discussing Lemley's conclusions). Lemley acknowledges that the figure he reports of 5% does not include patents that are cross-licensed. These patents, however, are largely irrelevant to a discussion of improving communications regarding patent scope. "Large companies tend to come to the table with hundreds of patents on each side, relying on volume rather than quality in some sort of 'patent arms race.'" Lemley, *supra* note 162, at 1504. Similarly, some patents may be valuable, but never the subject of licensing discussions or disputes. Such patents, however, likely do not exhibit problems with communicating patent scope because those patents are not the subject of a disagreement regarding scope.

193. In theory, improved communication could render valuable some 95% of the patents that previously did not yield any revenue. Even if the improved communication doubled the number of patents producing any value (a very unlikely result), however, the benefits of the proposal still must be *ten times* greater than its per-patent cost to justify the proposal. Moreover, raising the cost of obtaining a patent might encourage some inventors not to seek patent protection at all, thereby potentially reducing the number of patents with some value.

194. BESSEN & MEURER, *supra* note 8, at 100; *see also id.* at 104 ("Each patent is like a lottery ticket.").

195. Miller, *supra* note 53, at 196 (noting that "it would of course be foolish to mandate new disclosure rules so exacting that the increased cost of patent preparation swamps any predictability benefit that the changes would produce.").

196. Long, *supra* note 18, at 487-88, 523. This specialized audience may provide for some communication advantages compared to other forms of property because specialized audiences may be able to interpret messages more easily. Henry Smith has argued that efficiency generally

Moreover, amortization effects are also reduced by the fact that patents are limited by both de jure and de facto time restrictions. Patents last less than twenty years,[197] but a patent related to rapidly changing technology may become obsolete in less time.

Despite these reasons to doubt the efficiency of improving the quality of the messages sent regarding patent scope, commentators have focused on changes to patent law that are designed to encourage all patentees to provide more information ex ante regarding patent scope.[198] For example, some have suggested requiring a glossary regarding terms in the patent.[199] Others have suggested new rules of interpretation, such as construing all uncertainties in a patent against the patentee as the drafter.[200] Such an "information-forcing penalty default" would, it is hoped, encourage the patentee to disclose information resolving those ambiguities. Such proposals to improve ex ante communication are unlikely to improve patent certainty efficiently. As an initial matter, these proposals mistakenly assume that the patentee possesses the information needed to prevent uncertainty.[201] As noted above, some of the sources of patent-scope

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requires that the size of an audience for a given message is inversely proportional to the amount of information contained in the message. "For the same cost, one can communicate a lot to a small, close-knit audience or a little to a large, anonymous audience." Smith, *supra* note 18, at 1125. Smith's thesis indicates that, with a small specialized audience, the marginal benefits from a modest investment in increased certainty may be large. Given the relatively small audience size for patents, a substantial amount of detailed information is, in fact, communicated, particularly in the "plain cases" noted above. *See id.* at 1173-76 (discussing the audiences for patents); *supra* note 162 and accompanying text. Nevertheless, because many patents do not generate any revenue, the expected benefit from increased ex ante investment in communication must be substantially discounted so that, even if a modest investment can substantially increase certainty, that expenditure may not exceed the expected benefit.

197. 35 U.S.C. § 154 (2000).

198. *See* BESSEN & MEURER, *supra* note 8, at 239; Mullally, *supra* note 9, at 380; Thomas, *supra* note 58, at 164 (noting that "many commentators believe it is only fair that inventors should claim their inventions precisely.").

199. Miller, *supra* note 53, at 203-05; *see also* Mullally, *supra* note 9, at 377-78 (discussing the voluntary use of a glossary).

200. Burk & Lemley, *supra* note 74, at 54; Miller, *supra* note 53, at 186.

201. Mullally, *supra* note 9, at 379; Bender, *supra* note 13, at 220; Thomas, *supra* note 58, at 167; *see, e.g.*, Miller, *supra* note 53, at 206 (proposing that patentees "provide an exclusive, exhaustive list of express definitions for any claim term to which the applicant gives a meaning other than it [sic] ordinary meaning"); Kieff, *supra* note 14, at 110-12 (advocating that patentees "simply draft[] a better patent disclosure at the outset"); Bender, *supra* note 13, at 220 (proposing that patentees identify when they act as their own lexicographers); *see also* Long, *supra* note 18, at 538 ("When the information costs of comprehending intangible goods are high, legal rules can compensate in other ways, such as by shifting information costs from observers onto owners, by forcing owners to disgorge information about the goods, or by lowering the sanction against observers for violating their legal duties.").

uncertainty are inherent.[202] Moreover, these proposals fail to establish that the cost of reducing any uncertainties is less than the benefits of the proposals, given the need to incur costs for the majority of patents where claim scope certainty will never matter.[203]

IV. IMPROVING COMMUNICATION AND DEFINITION OF PATENT SCOPE

A. The Efficient Definition and Communication of Patent Scope

Increasing the clarity of patent scope ex ante may prevent the sometimes substantial costs caused by uncertainty,[204] but additional resources should not be devoted to increased ex ante clarification unless the marginal costs exceed the resulting marginal gains. As indicated above, communication difficulties regarding patent scope limit the marginal benefits of enhanced ex ante delineation. For example, some sources of uncertainty regarding patent scope are difficult, if not impossible, to address ex ante. Words in patent claims, particularly broad terms, are inherently imprecise. Likewise, infringement scenarios that cannot be reasonably foreseen cannot be considered and addressed ex ante. Furthermore, even when enhanced ex ante delineation is possible, it may not be cost-effective because so few patents yield meaningful revenue.[205] Requiring patent applicants to include additional information might produce benefits for a small group of patents, but would raise costs for *every* application.

Efficiency is more likely to be achieved by deferring some efforts to determine more precisely the scope of a patent until after a patent is asserted–that is, ex post. Clarification at that time does not suffer from the efficiency-limiting constraints noted above. Although the words in a patent may still be inherently imprecise, the scope of the patent need only be *partially* clarified–enough to address the alleged infringement. Similarly, ex post clarification need not address all potential infringement scenarios. Instead, it is only necessary to

202. *See supra* Parts III.A.1 to III.A.3.

203. *But see* Miller, *supra* note 53, at 196-99 (arguing that certain enhancements to patent disclosure are cost effective). Reforms premised on using the preexisting patent disclosure requirements more effectively to promote clarity–particularly in the "plain cases" for which terms are clear–do not suffer from this deficiency. *But cf.* Lemley, *supra* note 162, at 1523 (noting that an argument against expanding the procedures for reviewing patent applications is consistent with proposals to improve the quality of the review without such expansions).

204. *See supra* notes 63-67 and accompanying text.

205. *See supra* notes 192-195 and accompanying text.

address the alleged infringement at issue.[206] Moreover, ex post clarification is likely to be required in the case of patents with sufficient potential value to justify a dispute. Though this ex post approach involves costs caused by ex ante errors in market behavior resulting from mistakes about the scope of patents and by the need to interpret the words in patent claims and to clarify the indeterminate aspects, it is likely to be more efficient than requiring all patentees to provide enhanced ex ante messages regarding the scope of all patents.[207]

Though some critics have argued that patents should have clear ex ante boundaries like real property,[208] an important body of scholarship concerning traditional property supports the advantage of ex post clarification of patent rights. For example, Terry Anderson and P.J. Hill argue in their well-known study of real property in the American West that, when the scope of an asset is uncertain and the resolution of that uncertainty through boundary definition activity could increase its value, efficiency may favor improving boundary definition for the asset.[209] The increase in value (marginal gain) efficiently justifies an increase in boundary definition (marginal cost). For example, Anderson and Hill contend that rising land values and the reduced cost of boundary communication made possible by the introduction of barbed wire led to the fencing of the American range. These changes led to an "increase of the productivity [in property] definition and enforcement activity" in the form of fences.[210]

Though Anderson and Hill focus on the marginal costs and benefits of establishing and enforcing boundaries in order to create new private property rights, such as the privatization of public property like land in the Great Plains, the same efficiency concerns

206. In fact, in typical patent litigation, the meaning of some claim terms is not contested. Disputes focus on less than all of the claim terms.

207. James Bessen and Michael J. Meurer argue that patent reform is necessary because the costs of patent litigation–the mainstay of ex post clarification of patent scope–currently exceed the benefits of patents. BESSEN & MEURER, *supra* note 8, at 218, 222-23. In short, they argue that the entire patent system is inefficient. Even if these commentators are correct, for the reasons noted herein, *some* ex post clarification of patent scope is important in a patent system that *is* operating efficiently.

208. BESSEN & MEURER, *supra* note 8, at 46-72.

209. Terry L. Anderson & P.J. Hill, *The Evolution of Property Rights: A Study of the American West*, 18 J.L. & ECON. 163, 167 (1975); *see* Harold Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV. 347, 349 (1967); *see also* Smith, *supra* note 18, at 1149-50 (discussing Demsetz).

210. Anderson & Hill, *supra* note 209, at 167.

apply to private property rights that already exist.[211] For example, if valuable mineral deposits are discovered on a parcel of land, the owner, or her neighbors, may rationally pay for a careful survey of the boundaries to determine exactly how much of the mineral deposit she can extract without trespassing on neighboring land. In determining whether to invest in enhanced boundary definition, it is crucial to identify circumstances where such investment will efficiently increase the value of the property right. That one parcel of land is more valuable if carefully surveyed does not justify an expensive survey for all parcels of land.

When a patent becomes the subject of an infringement dispute, increased investment in scope clarification is more likely to produce substantial benefits because the patent is likely one of the few patents that is valuable and because that value likely depends, at least in part, upon the resolution of uncertainties regarding the patent's scope.[212] For that group of patents, the litigation exposes "[a]n increase in the probability of loss" of value claimed by the patent owner,[213] which "will usually result in an increase in the productivity of property rights [definition] activities."[214] Thus, it is more efficient to focus resources on resolving uncertainty at this ex post time than to do so ex ante.

Louis Kaplow's well-known analysis of rules and standards further indicates that patent clarification ex post sometimes is more efficient than enhanced communication ex ante. Kaplow contrasts "rules," which provide details ex ante regarding legally proscribed conduct, with "standards," which provide general guidelines that are clarified ex post, such as through litigation.[215] Kaplow argues that, when there is little chance that a law will apply to a particular factual scenario, efficiency is promoted by utilizing a standards-based wait-and-see approach rather than investing resources ex ante to craft a detailed rule governing that scenario.[216] "For example, the law of negligence applies to a wide array of complex accident scenarios,

211. *Id.*

212. Lichtman, *supra* note 13, at 179 ("Patents that are drawn into litigation, however, are a special subset. They have economic consequence–why else would the parties find it worthwhile to invest in litigation?"). *But cf.* Anderson & Hill, *supra* note 209, at 178 ("The higher the value of an asset and the higher the probability of losing the right to use that asset, the greater the degree of definition and enforcement activity.").

213. Anderson & Hill, *supra* note 209, at 167.

214. *Id.*

215. Kaplow, *supra* note 36, at 560.

216. *Id.* at 577; *see also id.* at 579 ("The value of effort in designing a rule depends upon the frequency of behavior subject to the rule . . . .").

many of which are materially different from each other and, when considered in isolation, are unlikely to occur."[217] Patents impose a legal duty not to engage in infringing activities. However, because most patents do not generate revenue, they are never applied to infringement scenarios. As a result, treating the uncertain margins of patent claims as standards to be clarified ex post is likely to be more efficient than requiring that patent claims be drafted as fully-specified rules.[218]

Increased reliance on ex post clarification of patent scope, as opposed to increasing ex ante clarification, will cause patent scope to be more uncertain for some period of time, and this additional uncertainty will entail costs. For example, the uncertainty may chill socially beneficial activity that falls within the uncertain portions of the patent's scope, even if it is later determined that the activity did not, in fact, infringe the patent.[219] In addition, there may be litigation costs incurred under an ex post system that would not occur as a result of the increased certainty available under a more robust ex ante scheme. Nevertheless, because of the inherent limits of specifying patent scope ex ante and the inefficiency of investing in the majority of patents having little or no value, ex post clarification provides substantial benefits. To promote "the Progress of Science and useful Arts" efficiently, the relative costs and benefits of both ex ante specification of patent scope and ex post clarification must be balanced.[220]

B. Mechanisms for Ex Post Clarification of Patent Scope

The remainder of this section discusses the current approach to ex post clarification of patent scope and some proposals for improving it.[221] Two fora are generally available for ex post

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217. *Id.* at 564.

218. *See id.* at 573 ("Even if they are extremely costly to apply, the significant likelihood that the particular application will never arise may make standards much cheaper.").

219. For a more lengthy discussion of the costs of uncertain patents, *see supra* notes 63-66 and accompanying text.

220. U.S. CONST. art. I, § 8, cl. 8; *see* Cotropia, *supra* note 9, at 95.

221. The proposal to rely on ex post clarification of patent scope has some similarities with the "soft look" registration approach described and analyzed by F. Scott Kieff. Under such an approach, patent applications are registered, not examined, so that all validity determinations occur ex post. Kieff, *supra* note 14, at 72. Kieff argues that such a registration system would be efficient in part because "the costs of providing the information needed to decide validity and the costs of 'correct' adjudication with the information are likely to be lower if these determinations are made in litigation than if they are made in patent examination." *Id.* at 73. Only patents that ultimately become the subject of a dispute would be tested for validity. *Id.* at

clarification: judicial litigation and administrative proceedings before the USPTO.[222]

1. Revisions to patent law applied in courts

Today, uncertainty regarding patent scope is clarified almost entirely through ex post judicial review in the form of claim construction. Although courts should more explicitly acknowledge that the scope of patent claims are largely indeterminate ex ante, many patent law doctrines already tacitly recognize that patent scope cannot be known ex ante. For example, patent infringement is a strict liability offense in that an infringer's ignorance of the scope of a patent is not a defense to infringement.[223] Similarly, courts have held that patent examiners must determine whether to grant a patent application based on the broadest reasonable construction of the claims, not on the examiner's own understanding.[224] This requirement recognizes that, if a patent application is granted, the examiner's own interpretation of the claims may differ from a later judicial construction. In particular, a patent examiner's own understanding of the scope of the claims might be narrower than a later judicial claim construction. In that case, the patent examiner might never have granted the patent application had the examiner considered the application using the broader interpretation.[225] Courts avoid that

72. Contrary to the thesis of this article, however, Kieff states that the patent applicant must "put the public on clear notice of what will infringe and what will not" and that "the patentee, as drafter, is the least cost avoider of such ambiguities." *Id.* at 99.

222. Other fora might be available, such as arbitration.

223. *In re* Seagate Tech., LLC, 497 F.3d 1360, 1368 (Fed. Cir. 2007); 35 U.S.C. § 284 (2000). Uncertainty regarding the scope of patent protection suggests that patent infringement should perhaps not be a strict liability offense. If an infringer could not have obtained the information necessary to avoid infringement, should the infringer nevertheless be liable? This issue requires further research and is beyond the scope of this article, in part because an infringer may be unable to know about a patent ex ante for reasons unrelated to the clarity of its scope, such as when infringement begins when a patent is still in the application stage. BESSEN & MEURER, *supra* note 8, at 10.

224. Springs Window Fashions LP v. Novo Indus., L.P., 323 F.3d 989, 995 (Fed. Cir. 2003).

225. That the patent examiner would have granted the patent using the court's construction is important because issued patents are by statute presumed to be valid, 35 U.S.C. § 282 (2000). Courts have further strengthened this presumption by requiring that invalidity be proven by clear and convincing evidence. Zenith Elec. Corp. v. PDI Commc'n Sys., Inc., 522 F.3d 1348, 1363 (Fed. Cir. 2008). This presumption is based at least in part on:

> the deference that is due to a qualified government agency presumed to have properly done its job, which includes one or more examiners who are assumed to have some expertise in interpreting the references and to be familiar from their work with the level of skill in the art and whose duty it is to issue only valid patents.

problem by requiring examiners to assess patentability using the broadest reasonable construction, so that a later judicial claim construction is likely to be no broader than the construction used to issue the patent. Because narrower claims are more likely to satisfy patentability requirements, the patent examiner likely would have granted the patent application even if it used the court's later construction.[226]

Certain patent law doctrines, however, improperly assume that patents provide ex ante notice of the scope of patent rights. For instance, a court may increase damages for "willful" infringement,[227] and courts sometimes hold that mere knowledge of a patent renders infringement willful.[228] Merely reading a patent may be held to provide sufficient notice of the scope of a patent to render infringement willful, thereby entitling the patentee to enhanced damages.[229] Courts should recognize, however, that the patent, by itself, provides notice of scope only with familiar prototypes and should limit findings of willful infringement accordingly.[230]

McGinley v. Franklin Sports, Inc., 262, F.3d 1339, 1353 (Fed. Cir. 2001); *accord* Lemley, *supra* note 162, at 1527-28. The competence of patent examiners only justifies the presumption of validity; however, if a patent examiner would not have granted the patent application had the examiner used the claim construction later found by a court.

226. *In re* Yamamoto, 740 F.2d 1569, 1571 (Fed. Cir. 1984) (noting that this approach "serves the public interest by reducing the possibility that claims, finally allowed, will be given broader scope than is justified.").

227. Thomas, *supra* note 58, at 164-65; *see also* Voda v. Cordis Corp., 536 F.3d 1311, 1327 (Fed. Cir. 2008) (noting that a finding of willful infringement may support an award of enhanced damages).

228. Thomas, *supra* note 58, at 164-65.

229. *Id.* On the other hand, courts reviewing a claim of willful infringement sometimes recognize that patents may not ex ante fully delineate the scope of provided rights. A good-faith defense to infringement based on a reasonable claim construction–even if that claim construction is ultimately rejected by the court–may prevent a patent owner from obtaining enhanced damages. Similarly, courts may not award enhanced damages for infringement under the Doctrine of Equivalents. "[I]t is not a rule of law that infringement that is not literal can never be sufficiently culpable to warrant enhanced damages . . . [but] avoidance of literal infringement is a fact to be considered and weighed, along with other relevant facts . . . ." *Hoechst* Celanese Corp. v. BP Chems. Ltd., 78 F.3d 1575, 1583-84 (Fed. Cir. 1996). Difficulties in determining patent scope ex ante may also justify limiting the remedy for patent infringement to a reasonable royalty instead of awarding injunctive relief. eBay Inc. v. MercExchange, L.L.C., 547 U.S. 388, 391 (2006) (requiring courts to consider equitable considerations before awarding injunctive relief for patent infringement); *see also* Smith, *supra* note 18, at 1166 (noting the importance of limiting the liability of audience members in some communications).

230. *See supra* notes 77-80 and accompanying text; *see also* Burk & Lemley, *supra* note 74, at 55 (arguing that certain patent law doctrines should be adjusted in light of inherent indeterminacy in the meanings of patent claims).

Courts should also acknowledge that, in light of indeterminacies of fact and aim, a patent might not communicate the full extent of patent scope to the *patentee*. For example, patent law requires that a patentee include sufficient information in the patent specification "to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same . . . ."[231] This enablement requirement applies to every patent claim individually, mandating that the specification enable each claim so that a skilled artisan could practice the invention without the need for "undue experimentation."[232] Significantly, if a claim is not enabled to its full scope, it is invalid.[233] A patentee, however, may enable a claim to the full extent of one possible interpretation of a patent claim, but not a broader interpretation that is later adopted by a court.[234] If the patentee reasonably and in good faith considered the patent narrower than ultimately construed by the court, the court should invalidate the patent claim only to the extent that it is broader than the patentee's construction.

2. A New Administrative Proceeding before the USPTO to Clarify Patent Scope

Much of the uncertainty regarding patent scope cannot be efficiently addressed ex ante, and ex post clarification generally occurs in the context of expensive patent litigation in the courts.[235] Therefore, to reduce the cost of ex post delineation, a new administrative procedure should be established in which the USPTO can more cheaply clarify patent claims.[236] Such a new procedure is necessary because the two existing ex post administrative proceedings, reexamination and reissuance proceedings,[237] do not provide opportunities for clarifying patent scope. Reexamination proceedings, which allow the USPTO to reconsider the validity of a patent in light of the state of the art prior to the alleged invention,[238] typically involve some prior art reference that was not considered

231. 35 U.S.C. § 112 (2000).

232. *In re* Wright, 999 F.2d 1557, 1561 (Fed. Cir. 1993).

233. Monsanto Co. v. Syngenta Seeds, Inc., 503 F.3d 1352, 1360-62 (Fed. Cir. 2007).

234. *See, e.g., id.* (finding a patent invalid for failing to satisfy the enablement requirement where the patent owner advocated for a narrower and fully enabled claim construction).

235. *See supra* notes 186-187 and accompanying text.

236. *Cf.* BESSEN & MEURER, *supra* note 8, at 241-42 (proposing that the USPTO provide an "opinion letter" regarding patent infringement).

237. *See supra* notes 186-188 and accompanying text.

238. 35 U.S.C. § 301 (2000).

before the patent issued.[239] Given their focus on validity in light of a prior art reference, reexaminations provide no meaningful opportunity for simply clarifying a patent's scope. Similarly, reissue proceedings only allow for the correction of patents that are "wholly or partially inoperative or invalid, by reason of a defective specification or drawing or by reason of the patentee claiming more or less than he had a right to claim in the patent."[240] Reissue proceedings are thus limited to correcting mistakes and would not support clarification of patent scope that, through no mistake, was inchoate and uncertain.

Reissue proceedings, however, could be expanded to include "*clarifying* reissue proceedings" that would allow for clarification regarding the meaning of words and phrases in patent claims.[241] Such proceedings would involve the review and reissue of patents with additional information that more clearly describes the scope of patent protection. Third-parties should be given meaningful adversarial rights because their involvement could help identify where and how the patent needs clarification and because such a meaningful role ensures the fairness of binding them to the clarification in later litigation concerning the patent, if any arises.[242] The patent examiner would be able to ensure that reissued claims clearly address the factual scenarios raised by third parties and patentees, thereby addressing indeterminacies of fact and aim in the patents scope.[243]

Most importantly, clarifying reissue proceedings would be cheaper than judicial claim construction in two respects. First, the USPTO has technical expertise that may facilitate efficient clarification.[244] For example, examiners can use that expertise to identify and understand which details of patent scope have already been delineated ex ante, which details therefore need further ex post clarification, and any relationships between the specified and unspecified details. Second, clarifying reissue proceedings would

239. *See* 35 U.S.C. § 303 (2000).

240. 35 U.S.C. § 251 (2000).

241. Administrative proceedings for clarifying patent scope could also be developed separately from current reissue proceedings, but leveraging existing administrative procedures might facilitate the creation of new procedures. Apart from the details sketched below, a complete discussion of the procedures for conducting clarifying reissue proceedings is beyond the scope of this article.

242. *See infra* note 246 and accompanying text. Reexamination proceedings currently allow for third party involvement. *See* 35 U.S.C. §§ 311-18 (2000).

243. *See* Burk & Lemley, *supra* note 74, at 50 (noting that "[l]awyers propose interpretations of claims with an eye toward the outcome they will produce").

244. *See* PowerOasis, Inc. v. T-Mobile USA, Inc., 522 F.3d 1299, 1304 (Fed. Cir. 2008); Paltex Corp. v. Mossinghoff, 758 F.2d 594, 602 (Fed. Cir. 1985).

focus only on claim construction and therefore would be cheaper than ex post clarification through litigation.[245] Judicial claim construction typically involves numerous other sources of expense, including discovery regarding all issues in a patent infringement case, even issues that are not directly related to claim construction, such as validity, equitable considerations relating to the enforceability of the patent, the details of an accused product or method, and counterclaims.[246] Because many patent suits settle after claim construction, clarifying reissue proceedings should prevent many patent infringement suits from ever being filed. In addition, even if a clarified reissue patent is later the subject of patent litigation, the cost of adding those clarifications would not be incurred a second time during the litigation. When a patent is reissued, the original, unclarified patent is "surrender[ed],"[247] and only the clarified reissued patent claims could be asserted in subsequent litigation.[248]

Some aspects of reissue proceedings are already well-suited to reducing patent-scope uncertainty. For example, patentees are prevented in current reissue proceedings from "recapturing" material disclaimed during prosecution[249] and from introducing new subject matter into the patent.[250] Clarifying reissue proceedings would likewise prohibit the patentee from changing the scope of the patent through recapture or expansion by way of adding new subject matter. Clarifying reissue proceedings would only provide an opportunity for *refining* uncertain scope, not changing that scope altogether.

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245. Similarly, reexamination proceedings are designed to "settle validity disputes more quickly and less expensively than the often protracted litigation involved in such cases." Paltex Corp., 758 F.2d at 602; *see also* Alan Devlin, *Revisiting the Presumption of Patent Validity*, 37 SW. U. L. REV. 323, 360 (2008) (stating that reexamination proceedings address validity more cheaply and efficiently than litigation).

246. *See, e.g.*, Dippin' Dots, Inc. v. Mosey, 476 F.3d 1337, 1345-46 (Fed. Cir. 2007) (deciding an appeal in a patent infringement case of issues related to claim construction, infringement, validity, inequitable conduct, and antitrust counterclaims). Some of these discovery costs might be avoided if judicial proceedings were bifurcated to allow for early resolution of claim construction issues.

247. 35 U.S.C. § 252 (2000).

248. Clarifying reissue proceedings would not bar litigants from later disputing the scope of the patent claims *as clarified*. Burk & Lemley, *supra* note 74, at 50. In a later claim construction dispute, however, a court would not repeat the administrative clarification. For example, a litigant would not be able to assert a claim construction that directly conflicted with the administrative clarifications. As with normal reissue proceedings, the court would accept as a starting point the clarified claims as if they were the claims that originally issued in the patent. *See* 35 U.S.C. § 252 (2000) (noting that reissue patents have the same "effect and operation of law . . . as if the same had been originally granted in such amended form).

249. *See* Mentor Corp. v. Coloplast, Inc., 998 F.2d 992, 995 (Fed. Cir. 1993).

250. 35 U.S.C. § 251 (2000).

The effect of clarifying reissue proceedings should differ from normal reissue proceedings in at least one important respect; normal reissue proceedings can give rise to "intervening rights," but clarifying reissue proceedings should not. Normal reissue proceedings may broaden patent rights beyond the scope of the original patent.[251] However, because "the public has a right to use what is not specifically claimed in the original patents,"[252] third parties cannot be liable for activities that occurred before reissuance and infringe the reissued patent but not the original patent.[253] The public has such "intervening rights" during the time period from the date the original patent issued and the date the patent was reissued. Similar to broadening reissue proceedings, some clarifying reissue proceedings might reject a narrower clarification in favor of a broader one. Such a selection should not create "intervening rights," however, because clarifying reissue would only make patent scope clearer, not *change* it.[254] Because patent infringement is a strict liability offense, the inability of a third party to know the detailed scope of the patent before clarifying reissuance should not create any temporary exemption from liability for damages.[255]

V. CONCLUSION

To serve the constitutional goal of patent law, "promot[ing] the Progress of Science and useful Arts,"[256] patent scope should be tailored to the patentee's inventive contribution, and should not restrain others from undertaking activities that are different from the patentee's invention. Frequently, however, inherent limitations undermine the capacity of words to capture and accurately convey the scope of the invention. Patent claims communicate for generally-accepted prototypical examples whether a factual scenario falls within

251. Current reissue proceedings allow a patentee to "enlarge[e] the scope of the claims," provided that the proceedings commence within two years of the patent issuing. 35 U.S.C. § 251 (2000).

252. Seattle Box Co. v. Indus. Crating & Packing, Inc., 756 F.2d 1574, 1579 (Fed. Cir. 1985).

253. 35 U.S.C. § 252 (2000). Courts may also grant third parties limited rights extending beyond reissuance on the basis of equity.

254. Clarifying reissue proceedings would merely elucidate and not *change* the scope of the patent. For this reason, the two-year limitation on broadening reissue would also not apply to clarifying reissue. Indeed, such a temporal limitation would be problematic since disputes regarding patent scope may not arise until more than two years after issuance.

255. *See In re* Seagate Tech., LLC, 497 F.3d 1360, 1368 (Fed. Cir. 2007). *See supra* note 223 and accompanying text.

256. U.S. CONST. art. I, § 8, cl. 8.

the protected contours of a patent.[257] Beyond the limited confines of agreed prototypes, the meanings of the terms in patent claims can, and to some degree must, be unclear. In addition, in order to capture the full scope of the invention, patent scope typically must be broadened beyond the original embodiment underlying the discovery. Even if this broadening is explicit, broad terminology exacerbates uncertainty. Uniformly requiring increased investment in ex ante delineation is wasteful because the vast majority of patents yield no revenue. [258] Thus, because of the inherent limitations of language and difficulties in foreseeing and describing all of the factual scenarios that might infringe a patent, clarifying ex post whether a patent's scope encompasses one particular factual scenario is likely to be more efficient than increased ex ante efforts.[259]

Many courts and commentators, however, present the uncertainty in claim construction as a breakdown in claim drafting or patent law, contending that claim construction should merely elucidate boundaries that were fully established ex ante. Certainly, some of the uncertainty in the scope of patent rights might be addressed through more explicit claim drafting or a more detailed specification.[260] Nevertheless, claim construction is at times the necessary last step in defining the scope of patents, not merely a mechanism for resolving disputes regarding rights of pre-determined scope.[261] Ex ante and ex post delineation therefore must be balanced

257. Solan, *supra* note 72, at 262 ("Our ability to apply . . . rules [of interpretation] so easily is what gives us some semblance of a rule of law."). *See also id.* at 264.

258. Some proposals for clarifying ex ante patent scope do not apply uniformly to all patents, and thus may not suffer from some of the efficiency concerns noted above. For example, some commentators have suggested that software patents should be granted sparingly because their boundaries are too difficult to delineate ex ante. BESSEN & MEURER, *supra* note 8, at 152, 243-44, 260. The USPTO has begun a pilot program that allows third parties to submit prior art relevant to certain pending patent applications. *See* Peer-Reviewed Prior Art Pilot, http://www.uspto.gov/web/patents/peerpriorartpilot/ (last visited Nov. 11, 2008). That prior art may help the examiner clarify the scope of an issued patent. These proposals, however, have limited impact on the need for ex post clarification because, by virtue of their limited application, these proposals do not impact a large number of patents.

259. HART, *supra* note 12, at 127 (noting that "something in the nature of a choice between open alternatives must be made by whoever is to resolve them" in order to address uncertainty regarding the scope of open-textured phrases).

260. *See* Mullally, *supra* note 9, at 370.

261. *See* Lemley, *supra* note 162, at 1522 ("On this view, the fact that accused infringers have to pay some of the cost of determining validity is not a bug in the system, but a feature."). Indeed, the need for additional decisions regarding patent scope–the exercise of a discretionary choice between numerous options–may help to explain why the Federal Circuit alters district court claim constructions in more than a third of all patent appeals. The Federal Circuit's choices may simply differ from those of district courts.

to promote efficiency. Courts should recognize the importance of ex post delineation of claims by adjusting certain patent law doctrines that are grounded on the incorrect assumption that patents communicate with virtual certainty patent scope ex ante.[262] Moreover, because the need for ex post delineation cannot be eliminated, it would be more efficient to adopt a new, relatively inexpensive administrative procedure to clarify claim scope without incurring the costs of full-blown patent litigation.

262. *See* Burk & Lemley, *supra* note 74, at 55 (discussing revisions to patent law doctrines based on the notice of patent scope provided ex ante by patents).

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